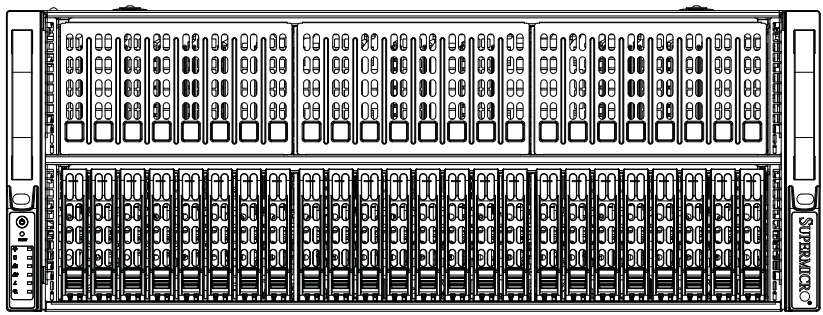
SUPER®

SuperServer

4048B-TRFT



USER'S MANUAL

Revision 1.0a

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Manual Revision 1.0a
Release Date: June 24, 2014

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 4048B-TRFT. Installation and maintainance should be performed by experienced technicians only.

The SuperServer 4048B-TRFT is a high-end server based on the SC418XTA-R3240B 4U rackmount chassis and the quad processor X10QBI serverboard, the X10QBI-MEM1 memory module card and the AOM-X10QBI-A I/O card.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the X10QBI serverboard and the SC418XTA-R3240B chassis.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 4048B-TRFT into a rack and check out the server configuration prior to powering up the system. If your server was ordered without processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

Refer here for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 4: Standardized Warning Statements

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the 4048B-TRFT.

Chapter 5: Advanced Serverboard Setup

Chapter 5 provides detailed information on the X10QBI serverboard, including the locations and functions of connections, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the serverboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC418XTA-R3240B server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SATA or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

Appendix A: BIOS Error Beep Codes

Appendix B: System Specifications

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Appendix A BIOS Error Beep Codes

Appendix B System Specifications

Chapter 1

Introduction

1-1 Overview

The SuperServer 4048B-TRFT is a high-end server comprised of four main subsystems: the SC418XTA-R3240B 4U server chassis and the X10QBI quad processor serverboard (baseboard), eight X10QBI-MEM1 memory module cards and one AOM-X10QBI-A I/O card. Please refer to our web site for information on operating systems that have been certified for use with the system (www.supermicro.com).

In addition to the serverboard and chassis, various hardware components have been included with the SuperServer 4048B-TRFT server, as listed below:

- Four passive heatsinks (SNK-P0048PS)
- One air shroud (MCP-310-41804-0B)
- Four 9-cm cooling fans (FAN-0146L4)
- Three 8-cm rear exhaust fans (FAN-0148L4)
- One SATA backplane (BPN-SAS3-216A)
- Twenty-four hot-swap 2.5" HDD trays (MCP-220-00047-0B)
- One rail set (MCP-290-00057-0N)

Note: For your system to work properly, please follow the links below to download all necessary drivers/utilities and the user's manual for your server.

- Supermicro product manuals: http://www.supermicro.com/support/manuals/
- Product drivers and utilities: ftp://ftp.supermicro.com
- Product safety info: http://super-dev/about/policies/safety_information.cfm
- If you have any questions, please contact our support team at: support@supermicro.co

1-2 Serverboard Features

At the heart of the SuperServer 4048B-TRFT lies the X10QBI, a quad processor serverboard based on the Intel® C602J chipset and designed to provide maximum performance. The X10QBI acts as a baseboard, into which an I/O card and memory cards may be installed.

The sections below cover the main features of the X10QBI serverboard (see Figure 1-1 for a block diagram of the chipset).

Processors

The X10QBI supports four Intel® Xeon® E7-4800 V2 series processors (Socket R1 LGA 2011). Please refer to the serverboard description pages on our web site for a complete listing of supported processors (www.supermicro.com).

Memory

The X10QBI uses eight memory cards that install into the eight memory slots on the serverboard. Two cards are assigned to each CPU as follows: SMI slots P1M1/P1M2 for CPU1, SMI slots P2M1/P2M2 for CPU2, SMI slots P3M1/P3M2 for CPU3 and SMI slots P4M1/P4M2 for CPU4.

Each memory card may be populated with up to 12 DIMMs. With all cards fully populated, the system will support up to a total of 6 TB of DDR3-1600/1333/1066/800 ECC RDIMM/LDIMM memory. See Chapter 5 for details.

Note: Check the Supermicro website (www.supermicro.com) for the latest memory support information.

Serial ATA

A SATA controller is integrated into the C602J chipset to provide two SATA 3.0 and four SATA 2.0 ports, which support RAID 0, 1, 5 and 10. The SATA drives are hot-swappable units.

PCI Expansion Slots

The X10QBI serverboard has four PCI Express 3.0 x16 slots and seven PCI Express 3.0 x8 slots.

1-3 Server Chassis Features

The following is a general outline of the main features of the SC418XTA server chassis.

System Power

The SC418XTA chassis model includes four 1620W power supplies consisting of two active and two backup power modules. In the unlikely event your power supply fails, replacement is simple and can be accomplished without tools.

SATA Subsystem

The SC418XTA supports up to 24 2.5" hot-swap hard drives. These drives are connected to a backplane that provides power and control. As an option, an extra backplane may be installed to support a total of up to 48 2.5" drives.

Front Control Panel

The SC418XTA chassis includes a control panel below the left handle of the chassis. The control panel provides you with system monitoring and control. LEDs indicate system power, HDD activity, network activity, an information LED and power supply failure. A main power button and a system reset button are also included.

I/O Ports

The chassis provides eight full-height, full-length expansion card slots, a COM port, two USB 2.0 ports and, on the I/O card, a VGA port, two 10 Gb Ethernet ports and a dedicated IPMI Ethernet port.

Cooling System

Four 9-cm and three 8-cm system fans are powered from the chassis and controlled via IPMI.

Air Shrouds

The SC418XTA chassis includes one mylar air shroud, which directs the airflow where cooling is needed. Always use the air shroud included with your server.

Note: if four memory modules are installed, an additional air shroud must be used (p/n MCP-310-41805-0B). See Chapter 6 for details.

Mounting Rails

The SC418XTA includes a set of quick-release rails, and can be placed in a rack for secure storage and use. To setup your rack, follow the instructions included in Chapter 2.

1-4 Memory Modules

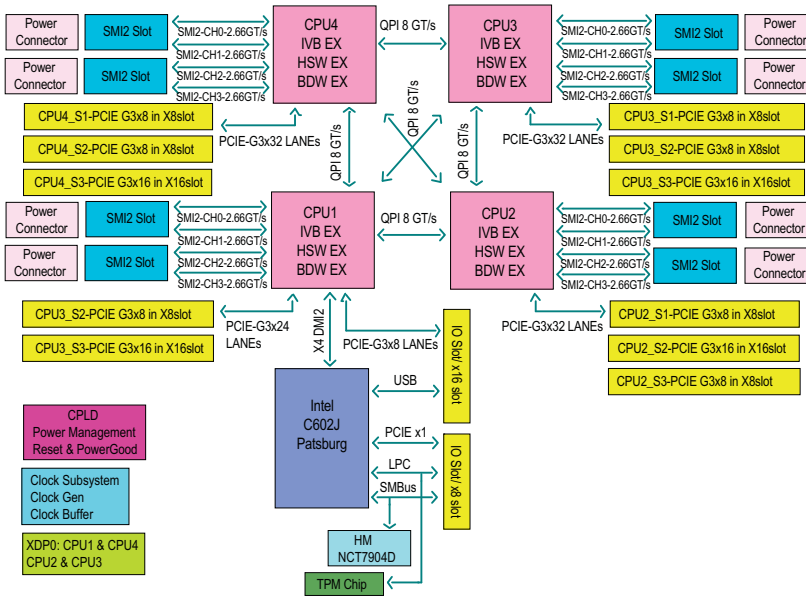
The X10QBI-MEM1 memory boards plug directly into the X10QBI baseboard. The memory boards feature a Jordan Creek C104 memory buffer chip. Each of these buffer chips supports two channels (three DIMMs per channel). See Chapter 5 for installation and details.

1-5 I/O Card

The AOM-X10QBI-A I/O card also is inserted directly into the X10QBI baseboard. The I/O card includes an Intel X540 Ethernet controller and an ASP2400 BMC chip to provide dual 10G based-T (RJ45) Ethernet ports and a dedicated IPMI port. This chip also provides onboard video. See Chapter 5 for installation and details.

Figure 1-1. Intel C602J Chipset: System Block Diagram

Note: This is a general block diagram and may not exactly represent the features on your serverboard. See the previous pages for the actual specifications of your serverboard. This block diagram is intended for your reference only.



1-6 Contacting Supermicro

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Email:	support@supermicro.com.tw
Web Site:	www.supermicro.com.tw

Chapter 2

Rack Installation

2-1 Overview

This chapter provides a quick setup checklist to get your chassis up and running. Following these steps in the order given should enable you to have the system operational within a minimal amount of time.

2-2 Unpacking the System

You should inspect the box which the chassis was shipped in and note if it was damaged in any way. If the chassis itself shows damage, you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold your chassis. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. The system needs to be placed near a grounded power outlet. Be sure to read the Rack and Server Precautions in the next section.

2-3 Preparing for Setup

The box your chassis was shipped in should include two sets of rail assemblies and the mounting screws needed for installing the system into the rack. Also included is an optional square hole to round hole converter bracket, for use in racks with round mounting holes. *Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow*.

Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches).
- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.
- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).

2-4 Warnings and Precautions

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installations, stabilizers should be attached to the rack.
- In multiple rack installations, the racks should be coupled together.
- Always make sure that the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

General Server Precautions

- Review the electrical and general safety precautions that came with the components you are adding to your chassis.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work upwards.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the hot plug hard drives and power supply modules to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (TMRA).

Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

Warning! To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

2-5 Rack Mounting Instructions

This section provides information on installing the chassis into a rack unit with the rails provided. There are a variety of rack units on the market, which may mean that the assembly procedure will differ slightly from the instructions provided. You should also refer to the installation instructions that came with the rack unit you are using. Note: This rail will fit a rack between 26.5" and 36.4" deep

Identifying the Sections of the Rack Rails

The chassis package includes a rack rail assembly in the rack mounting kit. Each assembly consists of three sections: An inner chassis rail which secures directly to the chassis, an outer rail that secures to the rack, and a middle rail which extends from the outer rail. These assemblies are specifically designed for the left and right side of the chassis..

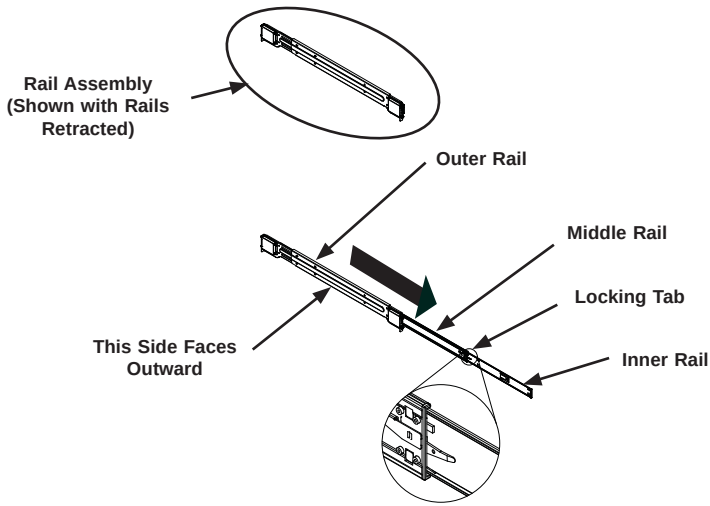
Installing the Inner Rails on the Chassis

Installing the Inner Rails

1. Place the inner rails on the side of the chassis aligning the hooks of the chassis with the inner rail holes. Make sure that the rail faces "outward" so that it will fit with the rack's mounting bracket.

2. Slide the rail toward the front of the chassis.

Figure 2-1. Identifying the Different Rail Sections



3. Secure the rail to the chassis with four screws as illustrated.

4. Repeat steps 1-3 for the other inner rack rail.Locking Tabs

Each inner rail has a locking tab. This tab locks the chassis into place when installed and pushed fully into the rack. These tabs also lock the chassis in place when fully extended from the rack. This prevents the server from coming completely out of the rack when when the chassis is pulled out for servicing.

Releasing the Inner Rail

Releasing Inner Rail from the Outer Rails

1. Identify the left and right outer rail assemblies as described on page 5-4.

2. Pull the inner rail out of the outer rail until it is fully extended as illustrated below.

3. Press the locking tab down to release the inner rail.

4. Pull the inner rail all the way out.

5. Repeat steps 1-3 for the second outer rail.

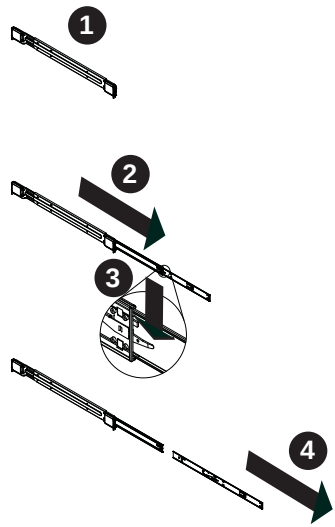


Figure 2-2. Extending and Releasing the Inner Rail

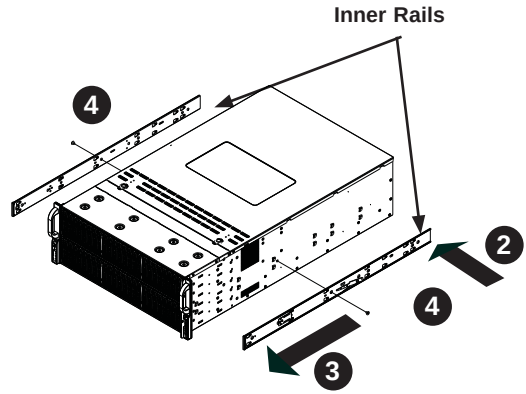


Figure 2-3. Installing the Inner Rails

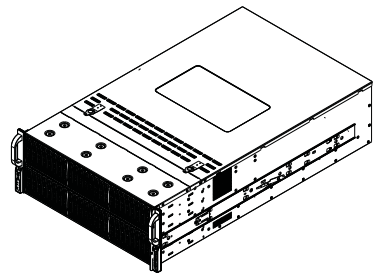


Figure 2-4. Inner Rails Installed on the Chassis

Installing The Inner Rails on the Chassis

Installing the Inner Rails

1. Confirm that the left and right inner rails have been correctly identified.

2. Place the inner rail firmly against the side of the chassis, aligning the hooks on the side of the chassis with the holes in the inner rail.

3. Slide the inner rail forward toward the front of the chassis until the rail clicks into the locked position, which secures the inner rail to the chassis.

4. Secure the inner rail to the chassis with the screws provided.

5. Repeat steps 1 through 4 above for the other inner rail.

Warning: do not pick up the server by the front handles. They are designed to pull the system from a rack only.

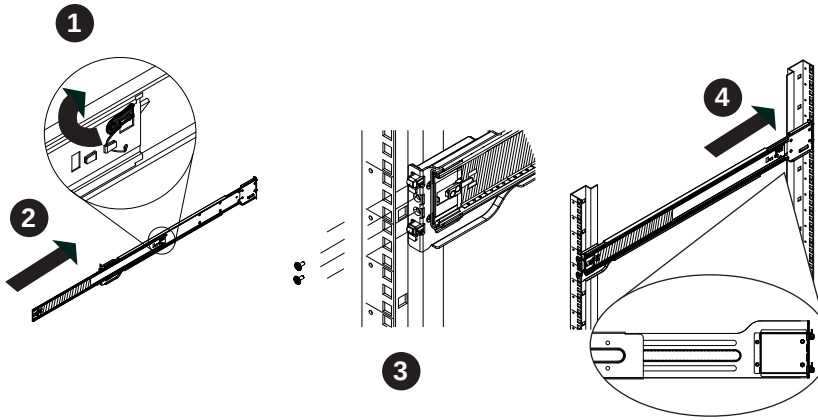


Figure 2-5. Extending and Releasing the Outer Rails

Installing the Outer Rails on the Rack

Installing the Outer Rails

1. Press upward on the locking tab at the rear end of the middle rail.

2. Push the middle rail back into the outer rail.

3. Hang the hooks of the front of the outer rail onto the slots on the front of the rack. If necessary, use screws to secure the outer rails to the rack, as illustrated above.

4. Pull out the rear of the outer rail, adjusting the length until it fits within the posts of the rack.

5. Hang the hooks of the rear portion of the outer rail onto the slots on the rear of the rack. If necessary, use screws to secure the rear of the outer rail to the rear of the rack.

6. Repeat steps 1-5 for the remaining outer rail.

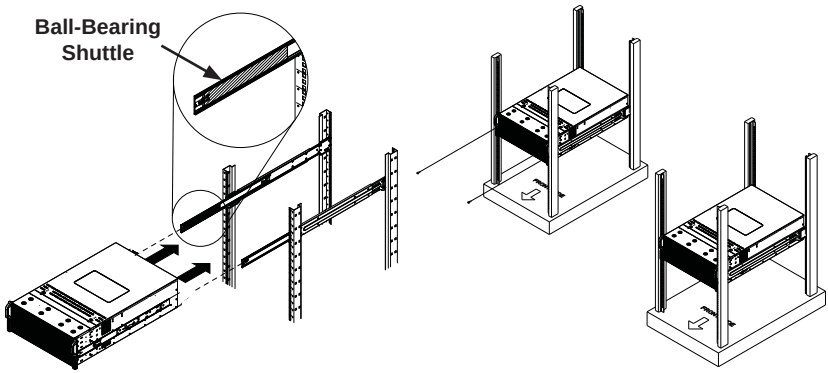


Figure 5-6: Installing into a Rack

Note: figures are for illustrative purposes only. Always install servers into racks from the bottom up.

Standard Chassis Installation

Installing the Chassis into a Rack

1. Confirm that the inner rails are properly installed on the chassis.
2. Confirm that the outer rails are correctly installed on the rack.
3. Pull the middle rail out from the front of the outer rail and make sure that the ball-bearing shuttle is at the front locking position of the middle rail.
4. Align the chassis inner rails with the front of the middle rails.
5. Slide the inner rails on the chassis into the middle rails, keeping the pressure even on both sides, until the locking tab of the inner rail clicks into the front of the middle rail, locking the chassis into the fully extended position.
6. Depress the locking tabs of both sides at the same time and push the chassis all the way into the rear of the rack.
7. If necessary for security purposes, use screws to secure the chassis handles to the front of the rack.

Stability hazard. The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide the unit out for servicing. Failure to stabilize the rack can cause the rack to tip over.

Optional Quick Installation Method

The following quick installation method may be used to install the chassis onto a rack.

Installing the Chassis into a Rack

1. Install the whole rail assembly onto the rack as described on page 2-7.
2. Release the inner rail without retracting the middle rail.
3. Install the inner rails on the chassis as previously described on page 2-6.
4. Install the chassis onto the middle rail as described in the previous section.

Notes

Chapter 3

System Interface

3-1 Overview

There are several LEDs on the control panel as well as others on the drive carriers to keep you constantly informed of the overall status of the system as well as the activity and health of specific components.

This chapter explains the meanings of all LED indicators and the appropriate responses you may need to take.

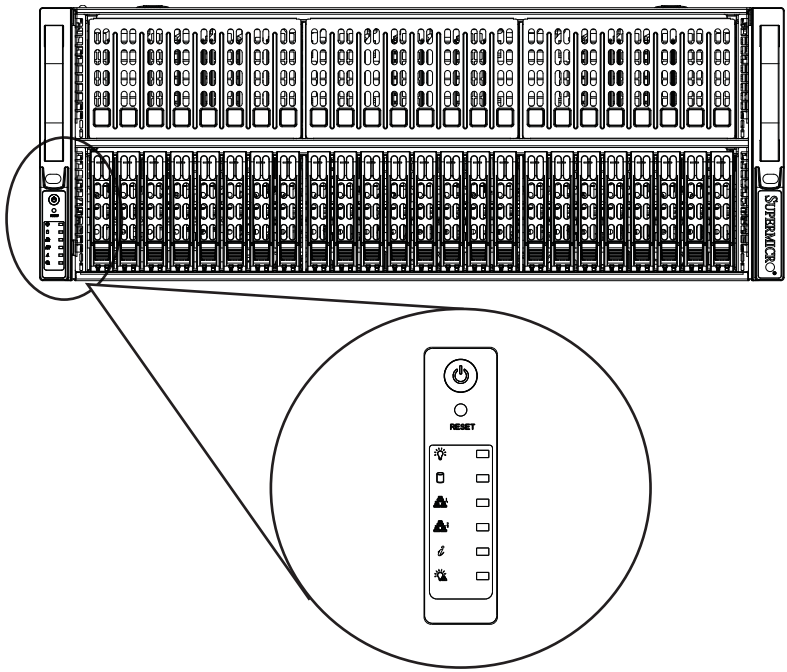


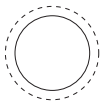
Figure 3-1: Front LED Panel

3-2 Control Panel Buttons

There are two push-buttons included on the control panel: a power button and a reset button.

Power

The main power button is used to apply or remove power from the power supply to the server system. Turning off system power with this button removes the main power but keeps standby power supplied to the system. Therefore, you must unplug system before servicing.



Reset

The reset button is used to reboot the system.

Power

Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

HDD

Indicates SATA drive activity when flashing.

NIC1

Indicates network activity on GLAN1 when flashing.

NIC2

Indicates network activity on GLAN2 when flashing.

Information LED

See the table below for the various conditions indicated by the Information LED.

Information LED	
Status	**Description**
Continuously on and red	An overheat condition has occured. (This may be caused by cable congestion.)
Blinking red (1Hz)	Fan failure, check for an inoperative fan.
Blinking red (0.25Hz)	Power failure, check for a non-operational power supply.
Solid blue	Local UID has been activated. Use this function to locate the server in a rack mount environment.
Blinking blue	Remote UID is on. Use this function to identify the server from a remote location.

If the server overheats:

- Use the LEDs to determine the nature of the overheating condition.
- Confirm that the chassis covers are installed properly.
- Check the routing of the cables and make sure all fans are present and operating normally.
- Verify that the heatsinks are installed properly.

Power Failure

When this LED flashes, it indicates a failure in the redundant power supply.

3-3 Drive Carrier LEDs

The chassis includes externally accessable SATA drives. Each drive carrier displays two status LEDs on the front of the carrier.

- **Green**: When illuminated, this LED indicates drive activity. It blinks on and off when that particular drive is being accessed This function is controlled by the backplane.
- **Red**: When illuminated, this LED indicates a drive failure. You should be notified by your system management software.

3-4 Power Supply LEDs

On the rear of the power supply module, an LED displays the status.

- **Solid Green**: When illuminated, indicates that the power supply is on.
- **Solid Amber**: When illuminated, indicates the power supply is plugged in and turned off, or the system is off but in an abnormal state.
- **Blinking Amber**: When blinking, this system power supply temperature has reached 63°C. The system will automatically power-down when the power supply temperature reaches 70°C and restarts when the power supply temperature goes below 60°C.

Chapter 4

Standardized Warning Statements for AC Systems

4-1 About Standardized Warning Statements

The following statements are industry standard warnings, provided to warn the user of situations which have the potential for bodily injury. Should you have questions or experience difficulty, contact Supermicro's Technical Support department for assistance. Only certified technicians should attempt to install or configure components.

Read this appendix in its entirety before installing or configuring components in the Supermicro chassis.

These warnings may also be found on our web site at http://www.supermicro.com/about/policies/safety_information.cfm.

Warning Definition

Warning!

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

警告の定義

この警告サインは危険を意味します。

人身事故につながる可能性がありますので、いずれの機器でも動作させる前に、

電気回路に含まれる危険性に注意して、標準的な事故防止策に精通して下さい。

此警告符号代表危险。

您正处于可能受到严重伤害的工作环境中。在您使用设备开始工作之前，必须充分意识到触电的危险，并熟练掌握防止事故发生的标准工作程序。请根据每项警告结尾的声明号码找到此设备的安全性警告说明的翻译文本。

此警告符號代表危險。

您正處於可能身體可能會受損傷的工作環境中。在您使用任何設備之前，請注意觸電的危險，並且要熟悉預防事故發生的標準工作程序。請依照每一注意事項後的號碼找到相關的翻譯說明內容。

Warnung

WICHTIGE SICHERHEITSHINWEISE

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung vor Unfällen vertraut. Suchen Sie mit der am Ende jeder Warnung angegebenen Anweisungsnummer nach der jeweiligen Übersetzung in den übersetzten Sicherheitshinweisen, die zusammen mit diesem Gerät ausgeliefert wurden.

BEWAHREN SIE DIESE HINWEISE GUT AUF.

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Al final de cada advertencia encontrará el número que le ayudará a encontrar el texto traducido en el apartado de traducciones que acompaña a este dispositivo.

GUARDE ESTAS INSTRUCCIONES.

IMPORTANTES INFORMATIONS DE SÉCURITÉ

Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers liés aux circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions des avertissements figurant dans les consignes de sécurité traduites qui accompagnent cet appareil, référez-vous au numéro de l'instruction situé à la fin de chaque avertissement.

CONSERVEZ CES INFORMATIONS.

תקנון הצהרות אזהרה

הצהרות הבאות הן אזהרות על פי תקני התעשייה, על מנת להזהיר את המשתמש מפני חבלה פיזית אפשרית. במידה ויש שאלות או היתקלות בבעיה כלשהי, יש ליצור קשר עם מחלקת תמיכה טכנית של סופרמיקרו. טכנאים מוסמכים בלבד רשאים להתקין או להגדיר את הרכיבים.

יש לקרוא את הנספח במלואו לפני התקנת או הגדרת הרכיבים במארזי סופרמיקרו.

تحذير! هذا الرمز يعني خطر انك في حالة يمكن أن تتسبب في اصابة جسدية .
قبل أن تعمل على أي معدات،كن على علم بالمخاطر الناجمة عن الدوائر
الكهربائية
وكن على دراية بالممارسات الوقائية لمنع وقوع أي حوادث
استخدم رقم البيان المنصوص في نهاية كل تحذير للعثور ترجمتها

안전을 위한 주의사항

경고!

이 경고 기호는 위험이 있음을 알려 줍니다. 작업자의 신체에 부상을 야기 할 수 있는 상태에 있게 됩니다. 모든 장비에 대한 작업을 수행하기 전에 전기회로와 관련된 위험요소들을 확인하시고 사전에 사고를 방지할 수 있도록 표준 작업절차를 준수해 주시기 바랍니다.

해당 번역문을 찾기 위해 각 경고의 마지막 부분에 제공된 경고문 번호를 참조하십시오

BELANGRIJKE VEILIGHEIDSINSTRUCTIES

Dit waarschuwings symbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij een elektrische installatie betrokken risico's en dient u op de hoogte te zijn van de standaard procedures om ongelukken te voorkomen. Gebruik de nummers aan het eind van elke waarschuwing om deze te herleiden naar de desbetreffende locatie.

BEWAAR DEZE INSTRUCTIES

Installation Instructions

Warning!

Read the installation instructions before connecting the system to the power source.

設置手順書

システムを電源に接続する前に、設置手順書をお読み下さい。

警告
将此系统连接电源前,请先阅读安装说明。

警告
將系統與電源連接前，請先閱讀安裝說明。

Warnung

Vor dem Anschließen des Systems an die Stromquelle die Installationsanweisungen lesen.

¡Advertencia!

Lea las instrucciones de instalación antes de conectar el sistema a la red de alimentación.

Attention

Avant de brancher le système sur la source d'alimentation, consulter les directives d'installation.

יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח.

اقر إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

Waarschuwing

Raadpleeg de installatie-instructies voordat u het systeem op de voedingsbron aansluit.

Circuit Breaker

Warning!

This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 250 V, 20 A.

サーキット・ブレーカー

この製品は、短絡（過電流）保護装置がある建物での設置を前提としています。

保護装置の定格が250 V、20 Aを超えないことを確認下さい。

警告
此产品的短路(过载电流)保护由建筑物的供电系统提供,确保短路保护设备的额定电流不大于250V,20A。

警告
此產品的短路(過載電流)保護由建築物的供電系統提供,確保短路保護設備的額定電流不大於250V,20A。

Warnung

Dieses Produkt ist darauf angewiesen, dass im Gebäude ein Kurzschluss- bzw. Überstromschutz installiert ist. Stellen Sie sicher, dass der Nennwert der Schutzvorrichtung nicht mehr als: 250 V, 20 A beträgt.

¡Advertencia!

Este equipo utiliza el sistema de protección contra cortocircuitos (o sobrecorrientes) del edificio. Asegúrese de que el dispositivo de protección no sea superior a: 250 V, 20 A.

Attention

Pour ce qui est de la protection contre les courts-circuits (surtension), ce produit dépend de l'installation électrique du local. Vérifiez que le courant nominal du dispositif de protection n'est pas supérieur à :250 V, 20 A.

מוצר זה מסתמך על הגנה המותקנת במבנים למניעת קצר חשמלי. יש לוודא
המכשיר המגן מפני הקצר החשמלי הוא לא יותר מ-60VDC, 20A

هذا المنتج يعتمد على حماية الدائرة القصيرة التي تم تثبيتها في
المبنى
تأكد من أن الجهاز الواقي ليس أكثر من: 20A, 250VDC

경고!

이 제품은 전원의 단락(과전류)방지에 대해서 전적으로 건물의 관련 설비에 의존합니다. 보호장치의 정격이 반드시 250V(볼트), 20A(암페어)를 초과하지 않도록 해야 합니다.

Waarschuwing

Dit product is afhankelijk van de kortsluitbeveiliging (overspanning) van uw electrische installatie. Controleer of het beveiligde aparaat niet groter gedimensioneerd is dan 220V, 20A.

Power Disconnection Warning

Warning!

The system must be disconnected from all sources of power and the power cord removed from the power supply module(s) before accessing the chassis interior to install or remove system components.

電源切断の警告

システムコンポーネントの取り付けまたは取り外しのために、シャーシー内部にアクセスするには、

システムの電源はすべてのソースから切断され、電源コードは電源モジュールから取り外す必要があります。

警告

在你打开机箱并安装或移除内部器件前,必须将系统完全断电,并移除电源线。

警告

在您打開機殼安裝或移除內部元件前，必須將系統完全斷電，並移除電源線。

Warnung

Das System muss von allen Quellen der Energie und vom Netzanschlusskabel getrennt sein, das von den Spg.Versorgungsteilmodulen entfernt wird, bevor es auf den Chassisinnenraum zurückgreift, um Systemsbestandteile anzubringen oder zu entfernen.

¡Advertencia!

El sistema debe ser disconnected de todas las fuentes de energía y del cable eléctrico quitado de los módulos de fuente de alimentación antes de tener acceso el interior del chasis para instalar o para quitar componentes de sistema.

Attention

Le système doit être débranché de toutes les sources de puissance ainsi que de son cordon d'alimentation secteur avant d'accéder à l'intérieur du chassis pour installer ou enlever des composants de systéme.

אזהרה !

יש לנתק את המערכת מכל מקורות החשמל ויש להסיר את כבל החשמלי מהספק לפני גישה לחלק הפנימי של המארז לצורך התקנת או הסרת רכיבים.

يجب فصل النظام من جميع مصادر الطاقة وإزالة سلك الكهرباء من وحدة امداد الطاقة قبل
الوصول إلى المناطق الداخلية للهيكل لتثبيت أو إزالة مكونات الجهاز

경고!

시스템에 부품들을 장착하거나 제거하기 위해서는 섀시 내부에 접근하기 전에 반드시 전원 공급장치로부터 연결되어있는 모든 전원과 전기코드를 분리해주어야 합니다.

Waarschuwing

Voordat u toegang neemt tot het binnenwerk van de behuizing voor het installeren of verwijderen van systeem onderdelen, dient u alle spanningsbronnen en alle stroomkabels aangesloten op de voeding(en) van de behuizing te verwijderen

Equipment Installation

Warning!

Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

機器の設置

トレーニングを受け認定された人だけがこの装置の設置、交換、またはサービスを許可されています。

警告

只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

警告

只有經過受訓且具資格人員才可安裝、更換與維修此設備。

Warnung

Das Installieren, Ersetzen oder Bedienen dieser Ausrüstung sollte nur geschultem, qualifiziertem Personal gestattet werden.

¡Advertencia!

Solamente el personal calificado debe instalar, reemplazar o utilizar este equipo.

Attention

Il est vivement recommandé de confier l'installation, le remplacement et la maintenance de ces équipements à des personnels qualifiés et expérimentés.

אזהרה !

צוות מוסמך בלבד רשאי להתקין, להחליף את הציוד או לתת שירות עבור הציוד.

يجب أن يسمح فقط للموظفين المؤهلين والمدربين لتركيب واستبدال أو خدمة هذا الجهاز

경고!

훈련을 받고 공인된 기술자만이 이 장비의 설치, 교체 또는 서비스를 수행할 수 있습니다.

Waarschuwing

Deze apparatuur mag alleen worden geïnstalleerd, vervangen of hersteld door geschoold en gekwalificeerd personeel.

Restricted Area

Warning!

This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security. (This warning does not apply to workstations).

アクセス制限区域

このユニットは、アクセス制限区域に設置されることを想定しています。

アクセス制限区域は、特別なツール、鍵と錠前、その他のセキュリティの手段を用いてのみ出入りが可能です。

警告

此部件应安装在限制进出的场所，限制进出的场所指只能通过使用特殊工具、锁和钥匙或其它安全手段进出的场所。

警告

此裝置僅限安裝於進出管制區域，進出管制區域係指僅能以特殊工具、鎖頭及鑰匙或其他安全方式才能進入的區域。

Warnung

Diese Einheit ist zur Installation in Bereichen mit beschränktem Zutritt vorgesehen. Der Zutritt zu derartigen Bereichen ist nur mit einem Spezialwerkzeug, Schloss und Schlüssel oder einer sonstigen Sicherheitsvorkehrung möglich.

¡Advertencia!

Esta unidad ha sido diseñada para instalación en áreas de acceso restringido. Sólo puede obtenerse acceso a una de estas áreas mediante la utilización de una herramienta especial, cerradura con llave u otro medio de seguridad.

Attention

Cet appareil doit être installée dans des zones d'accès réservés. L'accès à une zone d'accès réservé n'est possible qu'en utilisant un outil spécial, un mécanisme de verrouillage et une clé, ou tout autre moyen de sécurité.

אזור עם גישה מוגבלת

אזהרה !
יש להתקין את היחידה באזורים שיש בהם הגבלת גישה. הגישה ניתנת בעזרת כלי אבטחה בלבד (מפתח, מנעול וכד').

تم تخصيص هذه الوحدة لتركيبها في مناطق محظورة .
يمكن الوصول إلى منطقة محظورة فقط من خلال استخدام أداة خاصة،
قفل ومفتاح أو أي وسيلة أخرى للالأمان

경고!

이 장치는 접근이 제한된 구역에 설치하도록 되어있습니다. 특수도구, 잠금 장치 및 키, 또는 기타 보안 수단을 통해서만 접근 제한 구역에 들어갈 수 있습니다.

Waarschuwing

Dit apparaat is bedoeld voor installatie in gebieden met een beperkte toegang. Toegang tot dergelijke gebieden kunnen alleen verkregen worden door gebruik te maken van speciaal gereedschap, slot en sleutel of andere veiligheidsmaatregelen.

Battery Handling

Warning!

There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions

電池の取り扱い

電池交換が正しく行われなかった場合、破裂の危険性があります。交換する電池はメーカーが推奨する型、または同等のものを使用下さい。使用済電池は製造元の指示に従って処分して下さい。

警告
电池更换不当会有爆炸危险。请只使用同类电池或制造商推荐的功能相当的电池更换原有电池。请按制造商的说明处理废旧电池。

警告
電池更換不當會有爆炸危險。請使用製造商建議之相同或功能相當的電池更換原有電池。請按照製造商的說明指示處理廢棄舊電池。

Warnung

Bei Einsetzen einer falschen Batterie besteht Explosionsgefahr. Ersetzen Sie die Batterie nur durch den gleichen oder vom Hersteller empfohlenen Batterietyp. Entsorgen Sie die benutzten Batterien nach den Anweisungen des Herstellers.

Attention

Danger d'explosion si la pile n'est pas remplacée correctement. Ne la remplacer que par une pile de type semblable ou équivalent, recommandée par le fabricant. Jeter les piles usagées conformément aux instructions du fabricant.

¡Advertencia!

Existe peligro de explosión si la batería se reemplaza de manera incorrecta. Reemplazar la batería exclusivamente con el mismo tipo o el equivalente recomendado por el fabricante. Desechar las baterías gastadas según las instrucciones del fabricante.

אזהרה !
קיימת סכנת פיצוץ של הסוללה במידה והוחלפה בדרך לא תקינה. יש להחליף את הסוללה בסוג התואם מחברת יצרן מומלצת.

סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

هناك خطر من انفجار في حالة استبدال البطارية بطريقة غير صحيحة فعليك استبدال البطارية
فقط بنفس النوع أو ما يعادلها كما أوصت به الشركة المصنعة
تخلص من البطاريات المستعملة وفقا لتعليمات الشركة الصانعة

경고!

배터리가 올바르게 교체되지 않으면 폭발의 위험이 있습니다. 기존 배터리와 동일하거나 제조사에서 권장하는 동등한 종류의 배터리로만 교체해야 합니다. 제조사의 안내에 따라 사용된 배터리를 처리하여 주십시오.

Waarschuwing

Er is ontploffingsgevaar indien de batterij verkeerd vervangen wordt. Vervang de batterij slechts met hetzelfde of een equivalent type die door de fabrikant aanbevolen wordt. Gebruikte batterijen dienen overeenkomstig fabrieksvoorschriften afgevoerd te worden.

Redundant Power Supplies

Warning!

This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.

冗長電源装置
このユニットは複数の電源装置が接続されている場合があります。
ユニットの電源を切るためには、すべての接続を取り外さなければなりません。

警告
此部件连接的电源可能不止一个，必须将所有电源断开才能停止给该部件供电。

警告
此裝置連接的電源可能不只一個，必須切斷所有電源才能停止對該裝置的供電。

Warnung

Dieses Gerät kann mehr als eine Stromzufuhr haben. Um sicherzustellen, dass der Einheit kein trom zugeführt wird, müssen alle Verbindungen entfernt werden.

¡Advertencia!

Puede que esta unidad tenga más de una conexión para fuentes de alimentación. Para cortar por completo el suministro de energía, deben desconectarse todas las conexiones.

Attention

Cette unité peut avoir plus d'une connexion d'alimentation. Pour supprimer toute tension et tout courant électrique de l'unité, toutes les connexions d'alimentation doivent être débranchées.

אם קיים יותר מספק אחד

אזהרה !
ליחדה יש יותר מחיבור אחד של ספק. יש להסיר את כל החיבורים על מנת לרוקן את היחידה.

قد يكون لهذا الجهاز عدة اتصالات بوحدات امداد الطاقة.
يجب إزالة كافة الاتصالات لعزل الوحدة عن الكهرباء

경고!

이 장치에는 한 개 이상의 전원 공급 단자가 연결되어 있을 수 있습니다. 이 장치에 전원을 차단하기 위해서는 모든 연결 단자를 제거해야만 합니다.

Waarschuwing

Deze eenheid kan meer dan één stroomtoevoeraansluiting bevatten. Alle aansluitingen dienen verwijderd te worden om het apparaat stroomloos te maken.

Backplane Voltage

Warning!

Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.

バックプレーンの電圧

システムの稼働中は危険な電圧または電力が、バックプレーン上にかかっています。

修理する際には注意ください。

警告

当系统正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

警告

當系統正在進行時，背板上有危險的電壓或能量，進行維修時務必小心。

Warnung

Wenn das System in Betrieb ist, treten auf der Rückwandplatine gefährliche Spannungen oder Energien auf. Vorsicht bei der Wartung.

¡Advertencia!

Cuando el sistema está en funcionamiento, el voltaje del plano trasero es peligroso. Tenga cuidado cuando lo revise.

Attention

Lorsque le système est en fonctionnement, des tensions électriques circulent sur le fond de panier. Prendre des précautions lors de la maintenance.

מתח בפנל האחורי

אזהרה !
קיימת סכנת מתח בפנל האחורי בזמן תפעול המערכת. יש להיזהר במהלך העבודה.

هناك خطر من التيار الكهربائي أوالطاقة الموجودة على اللوحة
عندما يكون النظام يعمل كن حذرا عند خدمة هذا الجهاز

경고!

시스템이 동작 중일 때 후면판 (Backplane)에는 위험한 전압이나 에너지가 발생합니다. 서비스 작업 시 주의하십시오.

Waarschuwing

Een gevaarlijke spanning of energie is aanwezig op de backplane wanneer het systeem in gebruik is. Voorzichtigheid is geboden tijdens het onderhoud.

Comply with Local and National Electrical Codes

Warning!

Installation of the equipment must comply with local and national electrical codes.

地方および国の電気規格に準拠
機器の取り付けはその地方および国の電気規格に準拠する必要があります。

警告

设备安装必须符合本地与本国电气法规。

警告

設備安裝必須符合本地與本國電氣法規。

Warnung

Die Installation der Geräte muss den Sicherheitsstandards entsprechen.

¡Advertencia!

La instalacion del equipo debe cumplir con las normas de electricidad locales y nacionales.

Attention

L'équipement doit être installé conformément aux normes électriques nationales et locales.

תיאום חוקי החשמל הארצי

אזהרה !
התקנת הציוד חייבת להיות תואמת לחוקי החשמל המקומיים והארציים.

تركيب المعدات الكهربائية يجب أن يمتثل للقوانين المحلية والوطنية المتعلقة بالكهرباء

경고!

현 지역 및 국가의 전기 규정에 따라 장비를 설치해야 합니다.

Waarschuwing

Bij installatie van de apparatuur moet worden voldaan aan de lokale en nationale elektriciteitsvoorschriften.

Product Disposal

Warning!

Ultimate disposal of this product should be handled according to all national laws and regulations.

製品の廃棄

この製品を廃棄処分する場合、国の関係する全ての法律・条例に従い処理する必要があります。

警告
本产品的废弃处理应根据所有国家的法律和规章进行。

警告
本產品的廢棄處理應根據所有國家的法律和規章進行。

Warnung

Die Entsorgung dieses Produkts sollte gemäß allen Bestimmungen und Gesetzen des Landes erfolgen.

¡Advertencia!

Al deshacerse por completo de este producto debe seguir todas las leyes y reglamentos nacionales.

Attention

La mise au rebut ou le recyclage de ce produit sont généralement soumis à des lois et/ou directives de respect de l'environnement. Renseignez-vous auprès de l'organisme compétent.

סילוק המוצר

אזהרה !
סילוק סופי של מוצר זה חייב להיות בהתאם להנחיות וחוקי המדינה.

عند التخلص النهائي من هذا المنتج ينبغي التعامل معه وفقا لجميع القوانين واللوائح الوطنية

경고!

이 제품은 해당 국가의 관련 법규 및 규정에 따라 폐기되어야 합니다.

Waarschuwing

De uiteindelijke verwijdering van dit product dient te geschieden in overeenstemming met alle nationale wetten en reglementen.

Hot Swap Fan Warning

Warning!

The fans might still be turning when you remove the fan assembly from the chassis. Keep fingers, screwdrivers, and other objects away from the openings in the fan assembly's housing.

ファン・ホットスワップの警告

シャーシから冷却ファン装置を取り外した際、ファンがまだ回転している可能性があります。ファンの開口部に、指、ドライバー、およびその他のものを近づけないで下さい。

警告
当您从机架移除风扇装置，风扇可能仍在转动。小心不要将手指、螺丝起子和其他物品太靠近风扇

警告
當您從機架移除風扇裝置，風扇可能仍在轉動。小心不要將手指、螺絲起子和其他物品太靠近風扇。

Warnung

Die Lüfter drehen sich u. U. noch, wenn die Lüfterbaugruppe aus dem Chassis genommen wird. Halten Sie Finger, Schraubendreher und andere Gegenstände von den Öffnungen des Lüftergehäuses entfernt.

¡Advertencia!

Los ventiladores podran dar vuelta cuando usted quite ell montaje del ventilador del chasis. Mandtenga los dedos, los destornilladores y todos los objetos lejos de las aberturas del ventilador

Attention

Il est possible que les ventilateurs soient toujours en rotation lorsque vous retirerez le bloc ventilateur du châssis. Prenez garde à ce que doigts, tournevis et autres objets soient éloignés du logement du bloc ventilateur.

אזהרה !
כאשר מסירים את חלקי המאוורר מהמארז, יתכן והמאוררים עדיין עובדים. יש להרחיק למרחק בטוח את האצבעות וכלי עבודה שונים מהפתחים בתוך המאוורר

من الممكن أن المراوح لا تزال تدور عند إزالة كتلة المروحة من الهيكل يجب إبقاء الأصابع ومفكات البراغي
وغيرها من الأشياء بعيدا عن الفتحات في كتلة المروحة.

경고!

섀시로부터 팬 조립품을 제거할 때 팬은 여전히 회전하고 있을 수 있습니다. 팬 조림품 외관의 열려있는 부분들로부터 손가락 및 스크류드라이버, 다른 물체들이 가까이 하지 않도록 배치해 주십시오.

Waarschuwing

Het is mogelijk dat de ventilator nog draait tijdens het verwijderen van het ventilatorsamenstel uit het chassis. Houd uw vingers, schroevendraaiers en eventuele andere voorwerpen uit de buurt van de openingen in de ventilatorbehuizing.

Power Cable and AC Adapter

Warning!

When installing the product, use the provided or designated connection cables, power cables and AC adaptors. Using any other cables and adaptors could cause a malfunction or a fire. Electrical Appliance and Material Safety Law prohibits the use of UL or CSA -certified cables (that have UL/CSA shown on the code) for any other electrical devices than products designated by Supermicro only.

電源コードとACアダプター

製品を設置する場合、提供または指定された接続ケーブル、電源コードとACアダプターを使用下さい。他のケーブルやアダプタを使用すると故障や火災の原因になることがあります。電気用品安全法は、ULまたはCSA認定のケーブル(UL/CSEマークがコードに表記)を Supermicroが指定する製品以外に使用することを禁止しています。

警告

安装此产品时,请使用本身提供的或指定的连接线,电源线和电源适配器.使用其它线材或适配器可能会引起故障或火灾。除了Supermicro所指定的产品,电气用品和材料安全法律规定禁止使用未经UL或CSA认证的线材。(线材上会显示UL/CSA符号)。

警告

安裝此產品時,請使用本身提供的或指定的連接線,電源線和電源適配器.使用其它線材或適配器可能會引起故障或火災。除了Supermicro所指定的產品,電氣用品和材料安全法律規定禁止使用未經UL或CSA認證的線材。(線材上會顯示UL/CSA符號)。

Warnung

Bei der Installation des Produkts, die zur Verfügung gestellten oder benannt Anschlusskabel, Stromkabel und Netzteile. Verwendung anderer Kabel und Adapter kann zu einer Fehlfunktion oder ein Brand entstehen. Elektrische Geräte und Material Safety Law verbietet die Verwendung von UL-oder CSA-zertifizierte Kabel, UL oder CSA auf der Code für alle anderen elektrischen Geräte als Produkte von Supermicro nur bezeichnet gezeigt haben.

¡Advertencia!

Al instalar el producto, utilice los cables de conexión previstos o designados, los cables y adaptadores de CA. La utilización de otros cables y adaptadores podría ocasionar un mal funcionamiento o un incendio. Aparatos Eléctricos y la Ley de Seguridad del Material prohíbe el uso de UL o CSA cables certificados que tienen UL o CSA se muestra en el código de otros dispositivos eléctricos que los productos designados por Supermicro solamente.

Attention

Lors de l'installation du produit, utilisez les bables de connection fournis ou désigné. L'utilisation d'autres cables et adaptateurs peut provoquer un dysfonctionnement ou un incendie. Appareils électroménagers et de loi sur la sécurité Matériel interdit l'utilisation de UL ou CSA câbles certifiés qui ont UL ou CSA indiqué sur le code pour tous les autres appareils électriques que les produits désignés par Supermicro seulement.

חשמליים ומתאמי AC

אזהרה !

כאשר מתקינים את המוצר, יש להשתמש בכבלים, ספקים ומתאמים AC אשר נועדו וסופקו לשם כך. שימוש בכל כבל או מתאם אחר יכול לגרום לתקלה או קצר חשמלי. על פי חוקי שימוש במכשירי חשמל וחוקי בטיחות, קיים איסור להשתמש בכבלים המוסמכים ב- UL או ב- CSA (כשאר מופיע עליהם קוד של UL/CSA) עבור כל מוצר חשמלי אחר שלא צוין על ידי סופרמיקרו בלבד.

عند تركيب الجهاز يجب استخدام كابلات التوصيل،والكابلات الكهربائية ومحولات التيار المتردد
التي . أن استخدام أي كابلات ومحولات أخرى يتسبب في حدوث عطل أو حريق.
تم توفيرها لك مع المنتج
الأجهزة الكهربائية ومواد قانون السلامة يحظر استخدام الكابلات CSA أو UL معتمدة من قبل
لأي أجهزة كهربائية أخرى غير المنتجات المعينة من قبل Supermicro
(التي تحمل علامة UL/CSA)

경고!

제품을 설치할 때에는 제공되거나 지정된 연결케이블과 전원케이블, AC어댑터를 사용해야 합니다. 그 밖의 다른 케이블들이나 어댑터들은 고장 또는 화재의 원인이 될 수 있습니다. 전기용품안전법 (Electrical Appliance and Material Safety Law)은 슈퍼마이크로에서 지정한 제품들 외에는 그 밖의 다른 전기 장치들을 위한 UL또는 CSA에서 인증한 케이블(전선 위에 UL/CSA가 표시)들의 사용을 금지합니다.

Waarschuwing

Bij het installeren van het product, gebruik de meegeleverde of aangewezen kabels, stroomkabels en adapters. Het gebruik van andere kabels en adapters kan leiden tot een storing of een brand. Elektrisch apparaat en veiligheidsinformatiebladen wet verbiedt het gebruik van UL of CSA gecertificeerde kabels die UL of CSA die op de code voor andere elektrische apparaten dan de producten die door Supermicro alleen.

Notes

Chapter 5

Advanced Serverboard Setup

This chapter covers the steps required to install the X10QBi-F serverboard into the chassis, connect the data and power cables and install add-on cards. All serverboard jumpers and connections are also described. A layout and quick reference chart are included in this chapter for your reference. Remember to completely close the chassis when you have finished working with the serverboard to better cool and protect the system.

5-1 Handling the Serverboard

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). To prevent the serverboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from electric static discharge.

Precautions

- Use a grounded wrist strap designed to prevent Electrostatic Discharge (ESD).
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Unpacking

The serverboard is shipped in antistatic packaging to avoid electrical static discharge. When unpacking the board, make sure the person handling it is static protected.

5-2 Connecting Cables

Now that the processors are installed, the next step is to connect the cables to the serverboard.

Connecting Data Cables

The cables used to transfer data from the peripheral devices have been carefully routed in preconfigured systems to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to reroute them as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). If you are configuring the system, keep the airflow in mind when routing the cables.

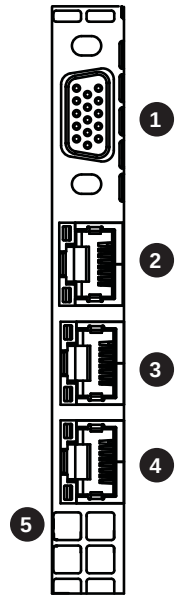
The following cables need to be connected for the SuperServer 4048B-TRFT system:

- One (1) round 76-cm (30") 16-to-16-pin ribbon FP cable (CBL-0071L)
- One (1) power extension cable; one HDD to two HDD and two FDD (CBL-0099)
- Two (2) cross-over mini SAS HD to four SATA HD cable (CBL-SAST-0591)

5-3 Control Panel Connectors and I/O Ports

The I/O ports on the are located at the rear of the system. See Figure 5-1 below for the locations of the various I/O ports.

Figure 5-1. Rear I/O Ports



Back Panel I/O Ports	
1.	VGA Port
2.	X540 10 Gb LAN2 Port
3.	X540 10 Gb LAN1 Port
4.	Dedicated IPMI LAN Port
5	UID Switch

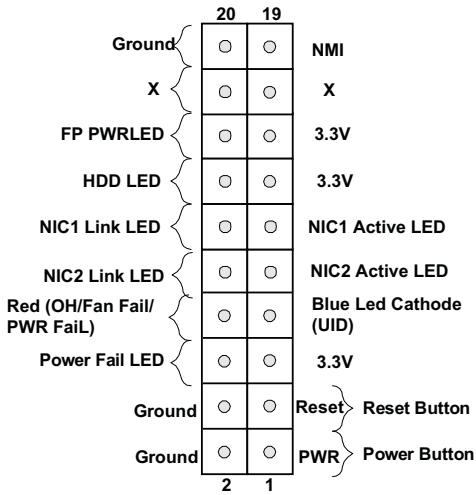
Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-1 for the pin locations of the various front control panel buttons and LED indicators. Even and odd numbered pins are on opposite sides of each header.

All JF1 wires have been bundled into single keyed ribbon cable to simplify their connection. The red wire in the ribbon cable plugs into pin 1 of JF1. Connect the other end of the cable to the Control Panel printed circuit board, located just behind the system status LEDs in the chassis.

See the Connector Definitions section in this chapter for details and pin descriptions of JF1.

Figure 5-2. Front Control Panel Header Pins (JF1)



5-4 Processor and Heatsink Installation

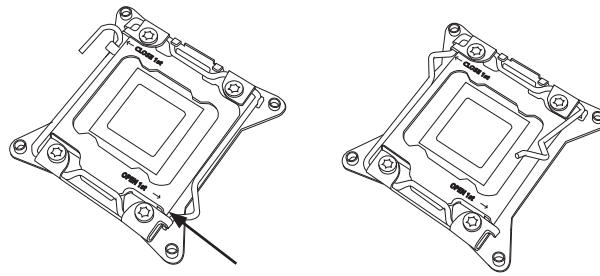
Warning: When handling the processor package, avoid placing direct pressure on the label area.

Notes

- Always connect the power cord last, and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.
- If you buy a CPU separately, make sure that you use an Intel-certified multi-directional heatsink only.
- Make sure to install the system board into the chassis before you install the CPU heatsink.
- When receiving a server board without a processor pre-installed, make sure that the plastic CPU socket cap is in place and none of the socket pins are bent; otherwise, contact your retailer immediately.
- Refer to the Supermicro website for updates on CPU support.
- When one CPU is installed, be sure to installed to CPU Socket 1 first.

Installing the E7-4800 V2 Processors

1. There are two load levers on the LGA2011 socket. To open the socket cover, first press and release the load lever labeled 'Open 1st'.

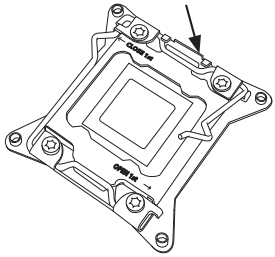


Press down on load lever labeled 'Open 1st'.

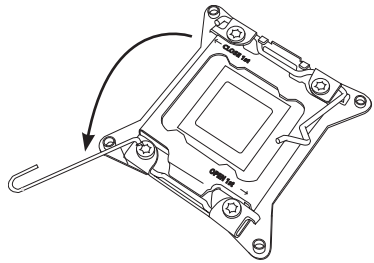
Note: There are four CPU sockets located on the X10QBi baseboard. Populate the desired number of CPUs on the board starting with CPU Socket 1.

2. Press the second load lever labeled 'Close 1st' to release the load plate that covers the CPU socket from its locking position.

Press down on the load lever labeled 'Close 1st'

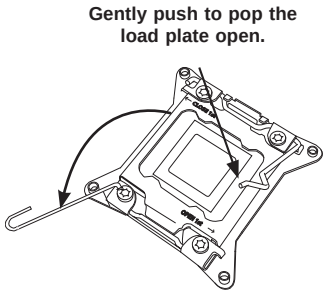


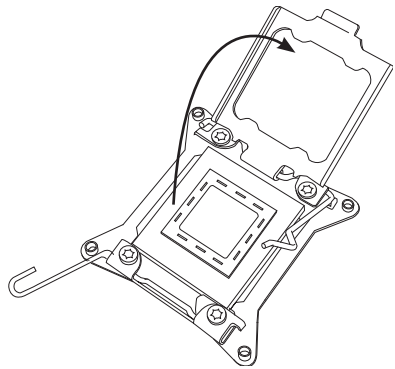
Pull the lever away from the socket



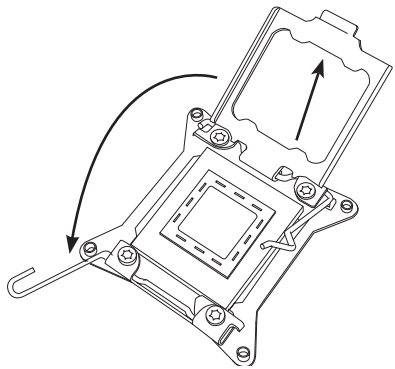
3. With the lever labeled 'Close 1st' fully retracted, gently push down on the lever marked 'Open 1st' to open the load plate. Lift the load plate to open it completely.

Gently push to pop the load plate open.

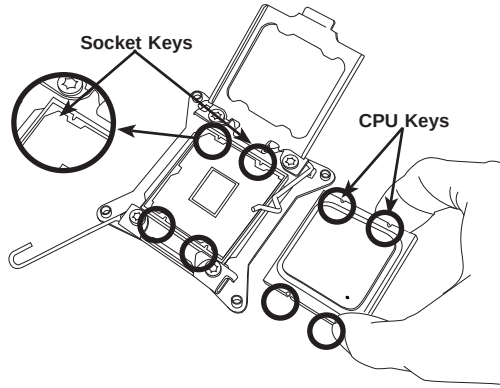




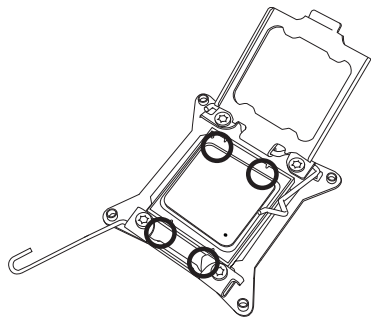
4. Use your index fingers to loosen the lever and open the load plate.



5. Use your thumb and index finger to hold the CPU on its edges. Align the CPU keys, which are semi-circle cutouts, against the socket keys.

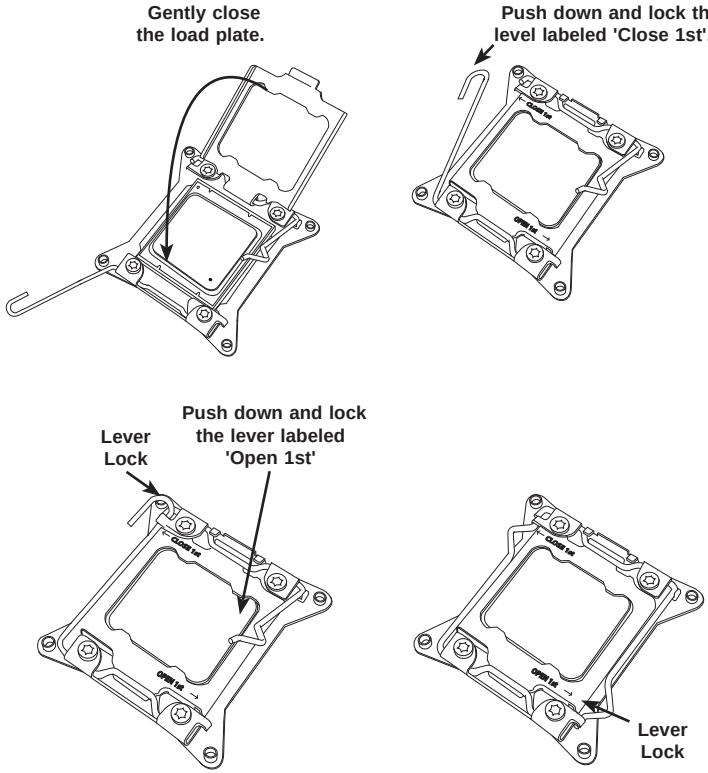


6. Once they are aligned, carefully lower the CPU straight down into the socket. (Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically. To avoid damaging the CPU or the socket, do not rub the CPU against the surface or against any pins of the socket.)



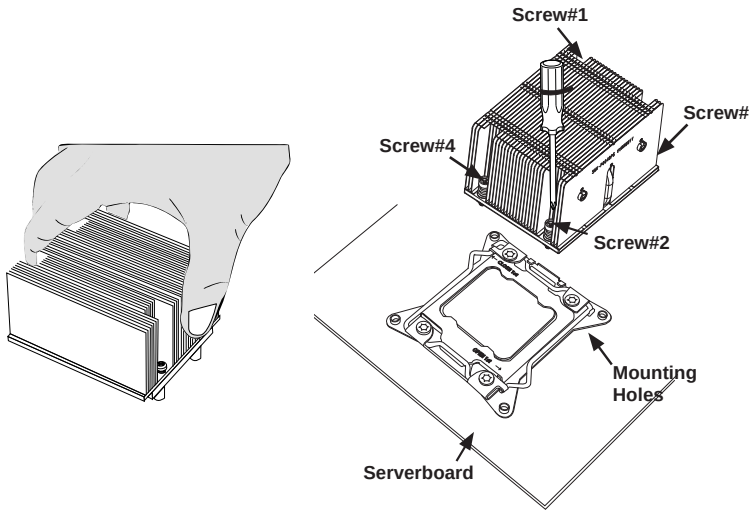
Warning: You can only install the CPU inside the socket in one direction. Make sure that it is properly inserted into the CPU socket before closing the load plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the CPU is aligned properly.

7. With the CPU inside the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed.
8. Close the load plate with the CPU inside the socket. Lock the lever labeled 'Close 1st' first, then lock the lever labeled 'Open 1st' second. Use your thumb to gently push the load levers down to the lever locks.


Gently close the load plate.
Push down and lock the level labeled 'Close 1st'.
Lever Lock
Push down and lock the lever labeled 'Open 1st'
Lever Lock

Installing a Passive CPU Heatsink

1. Do not apply any thermal grease to the heatsink or the CPU die; the required amount has already been applied.
2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the Serverboard's and the Heatsink Bracket underneath.
3. Screw in two diagonal screws (i.e., the #1 and the #2 screws) until just snug (to avoid possible damage to the CPU do not over-tighten the screws.)
4. Finish the installation by fully tightening all four screws.



Removing the Heatsink

Caution: We do not recommend that the CPU or the heatsink be removed. However, if you do need to uninstall the heatsink, please follow the instructions below to uninstall the heatsink to prevent damage done to the CPU or the CPU socket.

1. Unscrew the heatsink screws from the serverboard in the sequence as shown in the illustration below.
2. Gently wriggle the heatsink to loosen it from the CPU. (Do not use excessive force when wriggling the heatsink!)
3. Once the CPU is loosened, remove the CPU from the CPU socket.
4. Remove the used thermal grease and clean the surface of the CPU and the heatsink, Reapply the proper amount of thermal grease on the surface before reinstalling the CPU and the heatsink.

5-5 Installing Memory

Caution: exercise extreme care when installing or removing DIMMs to prevent any possible damage. DIMMs should be installed with the memory card removed from the baseboard. See the tables on page 5-12 for details on populating RDIMM/LDIMM memory.

Installing Memory

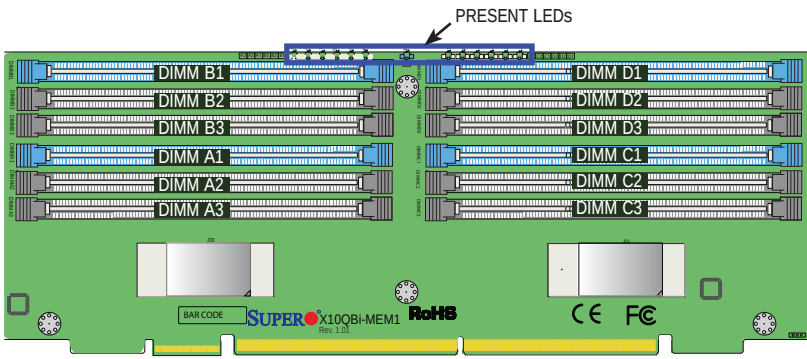
Insert the desired number of DIMMs into the slots on a memory card in the order shown in Figure 5-3. For best performance, use the memory modules of the same type and speed.

1. Push the release tabs outwards on both ends of the DIMM slot to unlock it.
2. Align the key of the DIMM module with the receptive point on the memory slot.
3. Press both ends of the module straight down into the slot until the module snaps into place.
4. Press the release tabs to the locking positions to secure the DIMM module into the slot.
5. Reverse the steps above to remove DIMM modules.

Memory Support

With all eight cards fully populated, the system will support up to a total of 6 TB of DDR3-1600/1333/1066/800 ECC RDIMM/LDIMM memory. Check the Supermicro website (www.supermicro.com) for the latest memory support information.

Figure 5-3. X10QBi-MEM1 Memory Card Layout



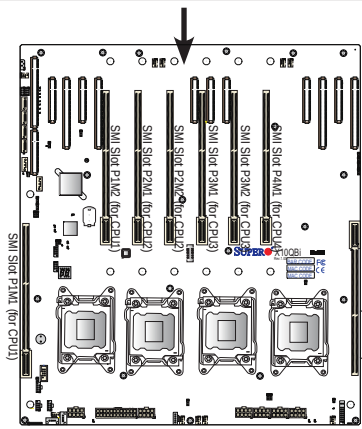
Notes: When installing a DIMM module, be sure to press the module straight down into the slot until it is properly seated and its PRESENT LED (as shown above) turns on.

Figure 5-4. X10QBi-MEM1 Memory Card Image

After populating DIMMs on the memory cards, follow the table below to Install one or two populated memory cards for each CPU installed on the baseboard. The baseboard has eight slots to accommodate eight memory cards.

CPUs and their Corresponding Memory Cards		
CPU#	**Corresponding DIMM Modules**	
	One Memory Card Per CPU	Two Memory Cards Per CPU
CPU 1	SMI Slot P1M1 (populate this slot first)	SMI Slot P1M1 + SMI Slot P1M2
CPU 2	SMI Slot P2M1 (populate this slot first)	SMI Slot P2M1 + SMI Slot P2M2
CPU 3	SMI Slot P3M1 (populate this slot first)	SMI Slot P3M1 + SMI Slot P3M2
CPU 4	SMI Slot P4M1 (populate this slot first)	SMI Slot P4M1 + SMI Slot P4M2

Slots for Memory Cards


SMI Slot P1M1 (for CPU1)
SMI Slot P1M2 (for CPU1)
SMI Slot P2M1 (for CPU2)
SMI Slot P2M2 (for CPU2)
SMI Slot P3M1 (for CPU3)
SMI Slot P3M2 (for CPU3)
SMI Slot P4M1 (for CPU4)
SMI Slot P4M2 (for CPU4)
SMI Slot P1M1 (for CPU1)
SMI Slot P4M2 (for CPU4)

Populating RDIMM/LRDIMM (ECC) Memory Modules

Intel E7 Series Processor RDIMM and LRDIMM Memory Configuration for Performance Mode (2:1)

Type	Ranks Per DIMM & Data Width	Memory DIMM Capacity		Max Speed (GHz), Voltage (V), Slot per Channel (SPC) and DIMM Per Channel (DPC)									
				2 SPC				3 SPC					
				1DPC		2DPC		1DPC		2DPC		3DPC	
		2Gb	4Gb	1.5V	1.35V	1.5V	1.35V	1.5V	1.35V	1.5V	1.35V	1.5V	1.35V
RDIMM	SRx4	4GB	8GB	1333	1333	1333	1333	1333	1333	1333	1066	1066	N/A
RDIMM	DRx4	8GB	16GB	1333	1333	1333	1333	1333	1333	1333	1066	1066	N/A
RDIMM	QRx4	16GB	32GB	1066	1066	1066	1066	1066	1066	N/A	N/A	N/A	N/A
LRDIMM	QRx4	16GB	32GB	1333	1333	1333	1333	1333	1333	1333	1333	1333	N/A
LRDIMM (RM)	8Rx4	32GB	64GB	1066	N/A	1066	N/A	1066	N/A	1066	N/A	1066	N/A

Notes: 1. For detailed information on memory support and updates, please refer to the SMC Recommended Memory List posted on our website at http://www.supermicro.com/support/resources/mem.cfm. 2. 1.35V DIMMs are not supported by the 3PDC configuration.

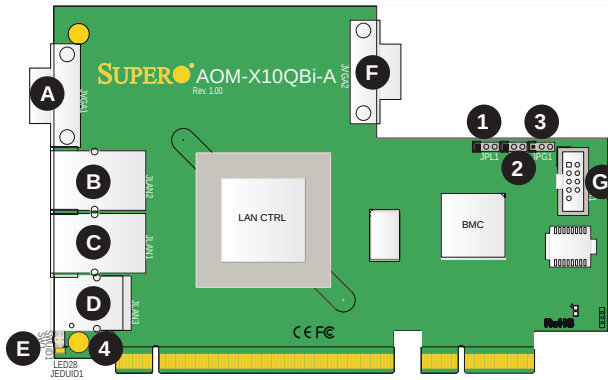
Intel E7 Series Processor RDIMM and LRDIMM Memory Configuration for Lockstep Mode (1:1)

Type	Ranks Per DIMM & Data Width	Maximum DIMM Capacity		Max Speed (GHz), Voltage (V), Slot per Channel (SPC) and DIMM Per Channel (DPC)									
				2 SPC				3 SPC					
				1DPC		2DPC		1 DPC		2DPC		3DPC	
		2Gb	4Gb	1.5V	1.35V	1.5V	1.35V	1.5V	1.35V	1.5V	1.5V	1.5V	1.35V
RDIMM	SRx4	4GB	8GB	1600	1333	1600	1333	1333	1333	1333	1066	1066	N/A
RDIMM	DRx4	8GB	16GB	1600	1333	1600	1333	1333	1333	1333	1066	1066	N/A
RDIMM	QRx4	16GB	32GB	1066	1066	1066	1066	1066	1066	N/A	N/A	N/A	N/A
LRDIMM	QRx4	16GB	32GB	1600	1333	1600	1333	1600	1333	1600	1333	1333	N/A
LRDIMM (RM)	8Rx4	32GB	64GB	1066	N/A	1066	N/A	1066	N/A	1066	N/A	1066	N/A

Notes: 1. For detailed information on memory support and updates, please refer to the SMC Recommended Memory List posted on our website at http://www.supermicro.com/support/resources/mem.cfm. 2. 1.35V DIMMs are not supported by the 3PDC configuration

5-6 I/O Module Board

Figure 5-5. AOM-X10QBi-A I/O Module Layout

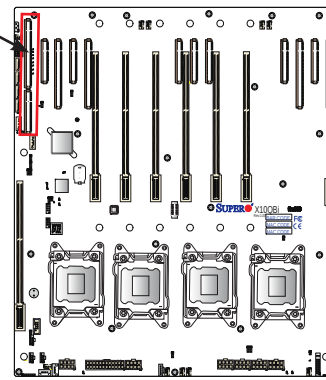


Jumpers			
Location	**Jumper**	**Description**	**Default**
1	JPL1	LAN Enable/Disable	Pins 1-2 (Enabled)
2	JPB1	BMC Enable/Disable	Pins 1-2 (Enabled)
3	JPG1	VGA Enable/Disable	Pins 1-2 (Enabled)

LED			
Location	**LED**	**Description**	**State**
4	LED28	UID LED (JEDUID1)	Blue: Unit Identified

Connectors		
Location	**Connector**	**Description**
A	JVG1	VGA Port1
B	JLAN2	LAN Port2
C	JLAN1	LAN Port1
D	JLAN3	LAN Port3
E	SW1	UID Switch
F	JVG2	VGA Port2
G	JCOM1	Debug

Slot for I/O Module



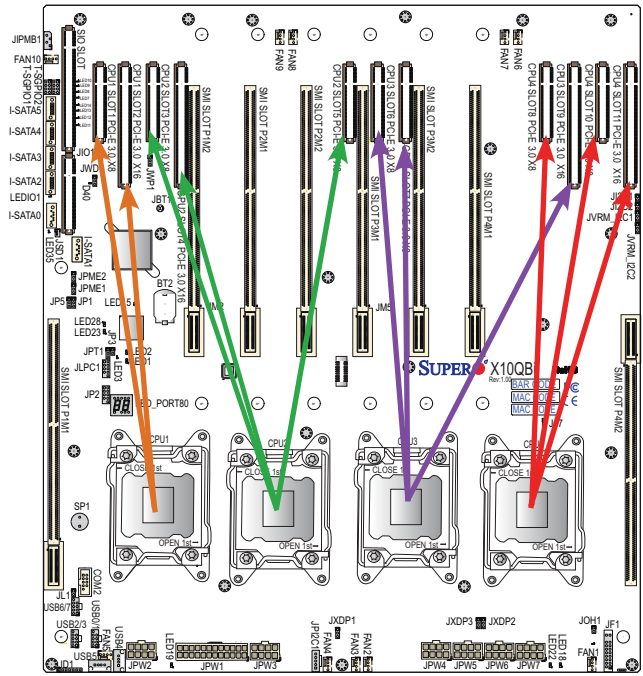
5-7 Adding PCI Expansion Cards

The 4048B-TRFT supports up to 11 PCI Express cards (four x16 and seven x8 slots).

Installing an Expansion Card

1. After powering down the system, remove the PCI slot shield.
2. Fully seat the card into the slot, pushing down with your thumbs evenly on both sides of the card. Note that each slot is controlled by a specific CPU. To use that slot, the corresponding CPU must be installed (see below).
3. Finish by using a screw to secure the top of the card shield to the chassis.

Figure 5-6. PCI Cards and Corresponding CPUs

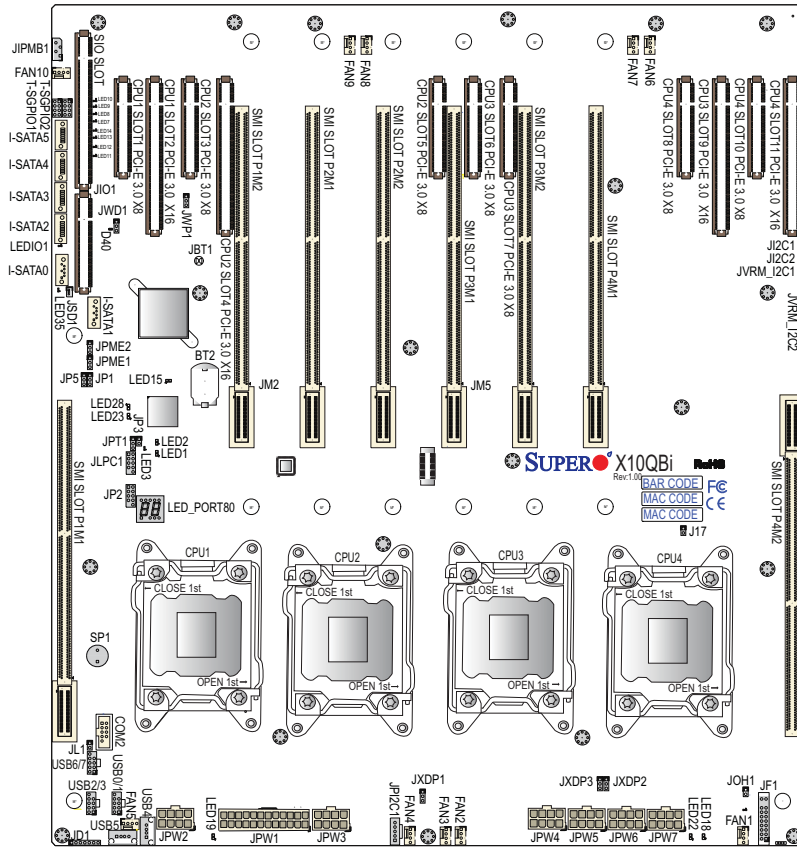


Note: PCI-E slots and CPUs support auto-switching. Refer to the table below for PCI-E slot support. On board rev. 1.01 or below, I-SATA3 and I-SATA 4 are reversed.

PCI-E Expansion Slots
CPU1 supports Slot1 PCI-E 3.0 x8, and Slot2 PCI-E 3.0 x16
CPU2 supports Slot3 PCI-E 3.0 x8, Slot4 PCI-E 3.0 x16, and Slot5 PCI-E 3.0 x8
CPU3 supports Slot6 PCI-E 3.0 x8 Slot7 PCI-E 3.0 x8, and Slot9 PCI-E 3.0 x16
CPU4 supports Slot8 PCI-E 3.0 x8, Slot10 PCI-E 3.0 x8, and Slot11 PCI-E 3.0 x16

5-8 Baseboard Details

Figure 5-7. X10QBi-F Baseboard Layout



Notes:

1. For the latest CPU/Memory updates, please refer to our website at **http://www.supermicro.com/products/serverboard/** for details.
2. Jumpers/LED Indicators not indicated are for testing only. Components that are not documented are reserved for internal testing only.
3. For the PCI-E slots to work properly, follow the instructions listed on the previous page.

X10QBi-F Quick Reference

Jumper	Description	Default Setting
JBT1	Clear CMOS	See Section 5-10
JI²C1/JI²C2	SMB to PCI-E Slots	Pins 2-3 (Disabled)
JPB1 (on I/O module)	BMC Enabled	Pins 1-2 (Enabled)
JPG1 (on I/O module)	VGA Enable	Pins 1-2 (Enabled)
JPME1	ME Mode Recovery	Pins 1-2 (Normal)
JPME2	ME Mode Select	Pins 1-2 (Normal)
JPL1 (on I/O module)	GLAN1/GLAN2 Enable	Pins 1-2 (via connected cable)
JPT1	TPM Enable	Pins 1-2 (Enabled)
JWD1	Watch Dog	Pins 1-2 (Reset)

Connectors	Description
FAN1-FAN10	4-pin System/Cooling Fan Headers
BT2	Onboard Battery
COM1	Serial/COM Part 1 (located on the I/O module)
COM2	Serial/COM Port Header 2
I-SATA 0-5	Intel SATA Ports 0-5
JD1	Speaker/Power LED Indicator
JF1	Front Panel Control Header
JIPMB1	4-pin External BMC I²C Header (for an IPMI Card)
JL1	Chassis Intrusion Header
JOH1	Overheat/Fan Fail LED Header
JPI²C1	Power Supply SMBbus I²C Header
JPW1	ATX 24-pin Power Connector
JPW2-JPW7	8-pin Power Connectors
JSD1	SATA DOM (Device on Module) Power Connector
JVG1/2	VGA/Video Port1/Port2 (located on the I/O module)
LAN1/2	Gb Ethernet Ports 1/2 (located on the I/O module)
LAN3 (on the I/O module)	BMC LAN (Dedicated IPMI LAN) (JLAN3)
SP1	Internal Speaker
T-SGPIO 1/2	Serial Link General Purpose I/O Headers
USB0/1, USB2/3, USB6/7	Front Panel Accessible USB Connections
USB4, USB5	Type A Front Panel USB Connectors 4/5
UID	UID Switch (SWUID1/SW1) (on the I/O module)
VGA 1/2	VGA Port

5-9 Connector Definitions

Power Connectors

A 24-pin main power supply connector (JPW 1) and six 8-pin power connectors (JPW2-JPW7) are located on the X10DBi serverboard. These power connectors meet the SSI EPS 12V specification. Connect these power connectors to your power supply to provide adequate power to your system. Refer to the table on the right for pin definitions.

ATX Power 24-pin Connector Pin Definitions

Pin#	Definition	Pin #	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

12V 8-pin Power Connector Pin Definitions

Pins	Definition
1 through 4	Ground
5 through 8	+12V

(Required)

Warning: To provide adequate power supply to the system, the 24-pin ATX PWR (JPW1) and all six 8-pin power connectors (JPW2-JPW7) must be connected to the power supply. Failure to do so will void the manufacturer warranty on your power supply and serverboard.

DOM Power Connector

A power connector for SATA DOM (Disk-On-Module) devices is located at JSD1. Connect the appropriate cable here to provide power support for your SATA DOM devices.

DOM PWR Pin Definitions

Pin#	Definition
1	+5V
2	Ground
3	Ground

PW_ON Connector

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in the BIOS - See Chapter 5). To turn off the power when the system is in suspend mode, press the button for 4 seconds or longer. Refer to the table on the right for pin definitions.

Power Button Pin Definitions (JF1)

Pin#	Definition
1	Signal
2	Ground

Reset Connector

The reset connector is located on pins 3 and 4 of JF1 and attaches to the reset button on the computer chassis. See the table on the right for pin definitions.

Reset Button Pin Definitions (JF1)

Pin#	Definition
3	Reset
4	Ground

Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1. Refer to the table on the right for pin definitions.

PWR Fail LED Pin Definitions (JF1)

Pin#	Definition
5	3.3V
6	PWR Supply Fail

Overheat (OH)/Fan Fail/PWR Fail/UID LED

Connect an LED cable to the OH/Fan Fail/FP UID connection on pins 7 and 8 of JF1 to provide advanced warnings of chassis overheating or fan failure. It also works as the front panel UID LED indicator. The red LED takes precedence over the blue LED by default. Refer to the table on the right for pin definitions.

OH/Fan Fail/PWR Fail/UID LED Pin Definitions (JF1)

Pin#	Definition
7	Red+ (Blue LED Cathode)
8	Blue+ (OH/Fan Fail/PWR Fail/ UID LED)

OH/Fan Fail Indicator Status

State	Definition
Off	Normal
On	Overheat
Flash-ing	Fan Fail

NIC1/2 (LAN1/2) LED Indicators

The NIC (Network Interface Controller) LED cLED indicator onnections for GLAN port 1 are located on pins 11 and 12 of JF1, and those of the GLAN Port 2 are on pins 9 and 10. Attach NIC LED cables here to display network activity. Refer to the table on the right for pin definitions.

NIC1/2 LEDs Pin Definitions (JF1)

Pin#	Definition
9	NIC2 Activity LED
10	NIC2 Link LED
11	NIC1 Activity LED
12	NIC1 Link LED

HDD LED

The HDD LED connection is located on pins 13 and 14 of JF1. Attach the hard drive LED cable here to display disk activity (for any hard drives on the system). See the table on the right for pin definitions

HDD LED Pin Definitions (JF1)

Pin#	Definition
13	3.3V Standby
14	HD Active

Power On LED

The Power On LED connector is located on pins 15 and 16 of JF1. This connection is used to provide LED indication of power being supplied to the system. See the table on the right for pin definitions.

Power LED Pin Definitions (JF1)

Pin#	Definition
15	3.3V
16	PWR LED

NMI Button

The non-maskable interrupt button header is located on pins 19 and 20 of JF1. Refer to the table on the right for pin definitions.

NMI Button Pin Definitions (JF1)

Pin#	Definition
19	Control
20	Ground

Fan Headers

The X10QBi system board has ten system fan headers and ten CPU card fan headers. All these are 4-pin fans and are backward compatible with traditional 3-pin fans. Fan speed control is available via IPMI interface for 4-pin fans only. See the table on the right for more information.

Fan Header Pin Definitions

Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	PWR Modulation (4-pin fans only)

Universal Serial Bus (USB)

Three Universal Serial Bus headers provide six USB connections on the baseboard (USB 0/1, 2/3, 6/7). Additionally, two Type A USB connectors (USB4, USB5) are also located on the board (cables not included). Refer to the tables on the right for pin definitions.

Type A USB (USB4/5) Pin Definitions

Pin#	Definition
1	+5V
2	PO-
3	PO+
4	Ground
5	NA

Backplane Accessible (USB0/1, 2/3, 6/7) USB Connectors Pin Definitions

USB0/2/6 Pin#	Definition	USB1/3/7 Pin#	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	NC	5	Key

(NC= No Connection)

Chassis Intrusion

A Chassis Intrusion header is located at JL1 on the system board. Attach an appropriate cable from the chassis to be informed of possible chassis intrusion when the chassis is opened.

Chassis Intrusion Pin Definitions

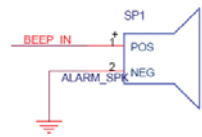
Pin#	Definition
1	Intrusion Input
2	Ground

Internal Speaker

The internal speaker, located at SP1, can be used to provide audible indications for various beep codes. See the table on the right for pin definitions.

Internal Speaker Pin Definition

Pin#		Definitions
Pin 1	Pos. (+)	Beep In
Pin 2	Neg. (-)	Alarm Speaker



Ethernet LAN Ports

Two Ethernet ports (LAN1/LAN2) are located on the AOM-X10QBi-A I/O module. In addition, a dedicated IPMI LAN is also located on the I/O module to provide KVM support for IPMI 2.0. All these ports accept RJ45 type cables.

LAN Ports Pin Definition

Pin#	Definition	Pin#	Definition
1	P2V5SB	10	SGND
2	TD0+	11	Act LED
3	TD0-	12	P3V3SB
4	TD1+	13	Link 100 LED (Yellow, +3V3SB)
5	TD1-	14	Link 1000 LED (Yellow, +3V3SB)
6	TD2+	15	Ground
7	TD2-	16	Ground
8	TD3+	17	Ground
9	TD3-	18	Ground

IPMB I²C SMB

A System Management Bus header for IPMI is located at JIPMB1. Connect an appropriate cable here to use the IPMB I²C connection on your system.

SMB Header (JIPMB1) Pin Definitions

Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

Power SMB (I2C) Connector

Power System Management Bus (I²C) Connector (JPI²C1) monitors power supply, fan and system temperatures. See the table on the right for pin definitions.

PWR SMB (JPI²C1) Pin Definitions

Pin#	Definition
1	Clock
2	Data
3	PWR Fail
4	Ground
5	+3.3V

T-SGPIO1/2 Headers

Two SGPIO (Serial-Link General Purpose Input/Output) headers are provided on the serverboard. These headers support a Serial Link interface for onboard SATA connections. See the table on the right for pin definitions.

T-SGPIO Pin Definitions

Pin#	Definition	Pin#	Definition
1	NC	2	NC
3	Ground	4	Data
5	Load	6	Ground
7	Clock	8	NC

(NC= No Connection)

Unit Identifier Switch/LED

A Unit Identifier (UID) switch on the AOM-X10QBi-A I/O module, and two LED indicators are located on the baseboard. The UID switch is located next to the LAN ports on the I/O module. The rear UID LED (LED28) is located next to the UID switch. The front panel UID LED is located at pins 7/8 of the Front Control Panel at JF1. Connect a cable to pins 7/8 on JF1 for front panel UID LED indication. When you press the UID switch, both rear UID LED and front panel UID LED indicators will be turned on. Press the UID switch again to turn off both LED indicators. These UID indicators provide easy identification of a system unit that may be in need of service.

Note: UID can also be triggered via the IPMI on the system serverboard. For more information on the IPMI, please refer to the IPMI User's Guide posted on our website at http://www.supermicro.com.

UID Switch

Pin#	Definition
1	Ground
2	Ground
3	Button In
4	Ground

UID LED Status

Color/State	OS	Status
Blue: On	Windows OS	Unit Identified
Blue: Blinking	Linux OS	Unit Identified

Serial Ports

COM1 is located on the AOM-X10QBi-A I/O module. COM2 is located on the X10QBi baseboard to provide front-accessible serial support. See the table on the right for pin definitions.

Serial COM) Ports Pin Definitions

Pin #	Definition	Pin #	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	N/A

Video Connectors

Two video (VGA) ports are located on the AOM-X10QBi-A I/O module. Refer to Section 5-6 for locations.

Power LED/Speaker

On the JD1 header, pins 1-3 are used for power LED indication, and pins 4-7 are for the speaker. See the tables on the right for pin definitions. Please note that the speaker connector pins (4-7) are for use with an external speaker. If you wish to use the onboard speaker, close pins 6-7 with a cap.

PWR LED Connector Pin Definitions

Pin Setting	Definition
Pin 1	Anode (+)
Pin2	Cathode (-)
Pin3	NA

Speaker Connector Pin Settings

Pin Setting	Definition
Pins 4-7	External Speaker
Pins 6-7	Internal Speaker

Overheat LED/Fan Fail

The JOH1 header is used to connect an LED indicator to provide warnings of chassis overheating or fan failure. This LED will blink when a fan failure occurs. Refer to the table on right for pin definitions.

Overheat LED Pin Definitions

Pin#	Definition
1	5vDC
2	OH Active

OH/Fan Fail LED Status

State	Message
Solid	Overheat
Blinking	Fan Fail

Power SMB (I^2C) Connector

The Power System Management Bus (I^2C) connector (JPI^2C1) is used to monitor onboard power supply, fan and system temperatures. Refer to the table on the right for pin definitions.

PWR SMB Pin Definitions

Pin#	Definition
1	Clock
2	Data
3	PMBUS_Alert
4	Ground
5	+3.3V

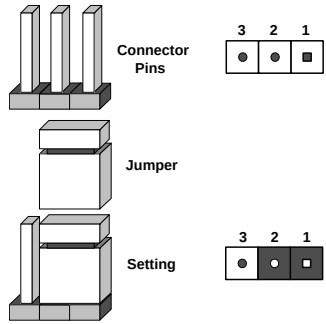
IPMB

A System Management Bus header for IPMI 2.0 is located at JIPMB1. Connect the appropriate cable here to use the IPMB I^2C connection for your system.

IPMB Header Pin Definitions

Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

5-10 Jumper Settings



Explanation of Jumpers

To modify the operation of the serverboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the diagram at right for an example of jumping pins 1 and 2. Refer to the serverboard layout page for jumper locations.

Note: On two-pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.

JBT1 contact pads

CMOS Clear

JBT1 is used to clear CMOS, which will also clear any passwords. Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

To Clear CMOS

1. First power down the system and unplug the power cord(s). It is also recommended that you remove the onboard battery from the serverboard.
2. With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver.
3. Remove the screwdriver (or shorting device).
4. Reconnect the power cord(s) and power on the system.

Note: *Do not use the PW_ON connector to clear CMOS*.

LAN Enable/Disable

JPL1 enables or disables the LAN Port1/ LAN Port2 on the X10QBi-A I/O module. Refer to the table on the right for jumper settings. The default setting is Enabled.

LAN Enable/Disable Jumper Settings

Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

BMC Enable

Jumper JPB1 allows you to enable the BMC controller on the X10QBi-A I/O module for IPMI/KVM support. The default setting is Normal. Refer to the table on the right for jumper settings.

BMC Enable/Disable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	BMC Enable
Pins 2-3	Normal

VGA Enable

Jumper JPG1 allows the user to enable the onboard VGA1/2 ports on the X10QBi-A I/O module. The default setting is Enabled. See the table on the right for jumper settings.

VGA Enable/Disable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

TPM Enable

Jumper JPT1 allows the user to enable TPM (Trusted Platform Module) support to enhance data security. The default setting is Enabled. See the table on the right for jumper settings.

TPM Enable/Disable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

Watch Dog Enable/Disable

Watch Dog (JWD1) is a system monitor that can reset the system when a software application hangs. Close pins 1-2 to reset the system if an application hangs. Close pins 2-3 to generate a non-maskable interrupt signal for the application that hangs. Refer to the table on the right for jumper settings. The default setting is Reset. Watch Dog must also be enabled in the BIOS.

Watch Dog Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Reset
Pins 2-3	NMI
Open	Disabled

I^2C Bus to PCI-Exp. Slots

Use JI^{2}C1 and JI^{2}C2 to connect the System Management Bus (I^2C) to the PCI-E slots to improve system performance. These two jumpers are to be set at the same time. The default setting is Open for normal operation. Refer to the table on the right for jumper settings.

I^2C for PCI-E Slots Jumper Settings	
Jumper Setting	Definition
Closed	Enabled
Open	Normal

Management Engine (ME) Recovery

Use jumper JPME1 to select ME Firmware Recovery mode, which will limit resource allocation for essential system operation only in order to maintain normal power operation and management. In the single operation mode, an online upgrade will be available via Recovery mode. The default setting is Normal. Refer to the table on the right for jumper settings.

ME Recovery Jumper Settings

Jumper Setting	Definition
Pins 1-2	Normal
Pins 2-3	ME Recovery

Manufacturer Mode Select

Close pin 2 and pin 3 of jumper JPME2 to bypass SPI flash security and force the system to operate in the Manufacturer mode, allowing the user to flash the system firmware from a host server for system-setting modifications. The default setting is Normal. Refer to the table on the right for jumper settings.

Manufacturer Mode Select Jumper Settings

Jumper Setting	Definition
Pins 1-2	Normal
Pins 2-3	Manufacturer Mode

5-11 Onboard Indicators

LAN LEDs

Two 10 Gb LAN ports (LAN 1/LAN 2) are located on the I/O module. Each Ethernet LAN port has two LEDs. The yellow LED indicates activity, while the Link LED may be green, amber, or off to indicate the speed of the connection. Refer to the tables on the right for more information.

LAN 1/LAN 2 Link LED LED State	
LED Color	Definition
Off	No Connection or 100 Mb/s
Green	10 Gb/s
Amber	1 Gb/s

LAN 1/LAN 2 Activity LED LED State		
Color nition	Status	Defi-
Yellow	Flashing	Active

Dedicated IPMI LAN LEDs

In addition to LAN1/LAN2, a dedicated IPMI LAN port is also located on the I/O module. The amber LED on the right indicates activity, while the green LED on the left indicates the speed of the connection. Refer to the table on the right for more information.

IPMI LAN Link LED & Activity LED		
LED tion	Color/State	Defini-
Link (Left)	Green: Solid	100 Mbps
Activity (Right)	Amber: Blink- ing	Active

5-12 Serial ATA Ports

SATA Ports

Six Serial ATA ports (I-SATA0~5) are located on the X10QBi baseboard (two SATA 3.0 and four SATA 2.0 ports). See the table on the right for pin definitions.

SATA Port Pin Definitions

Pin #	Definition
1	Ground
2	TXP
3	TXN
4	Ground
5	RXN
6	RXP
7	Ground

Note: For more information on SATA or RAID configuration, please refer to the Intel SATA HostRAID User's Guide on our Website @ http://www.supermicro.com.

5-13 Installing Software

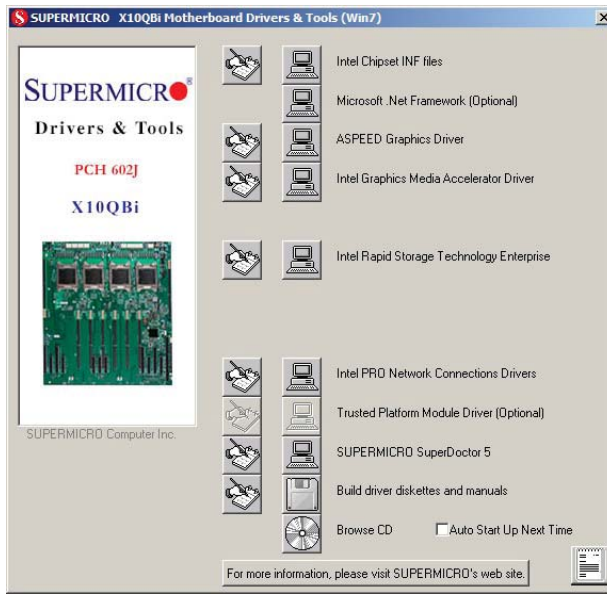
The Supermicro ftp site contains drivers and utilities for your system at ftp://ftp.supermicro.com. Some of these must be installed, such as the chipset driver.

After accessing the ftp site, go into the CDR_Images directory and locate the ISO file for your serverboard. Download this file to create a CD/DVD of the drivers and utilities it contains. (You may also use a utility to extract the ISO file if preferred.)

Another option is to go to the Supermicro Website at http://www.supermicro.com/products/. Find the product page for your serverboard here, where you may download individual drivers and utilities.

After creating a CD/DVD with the ISO files, insert the disk into the CD/DVD drive on your system and the display shown in Figure 5-8 should appear.

Figure 5-8. Driver/Tool Installation Display Screen



Note: Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before moving on to the next item on the list.** The bottom icon with a CD on it allows you to view the entire contents.

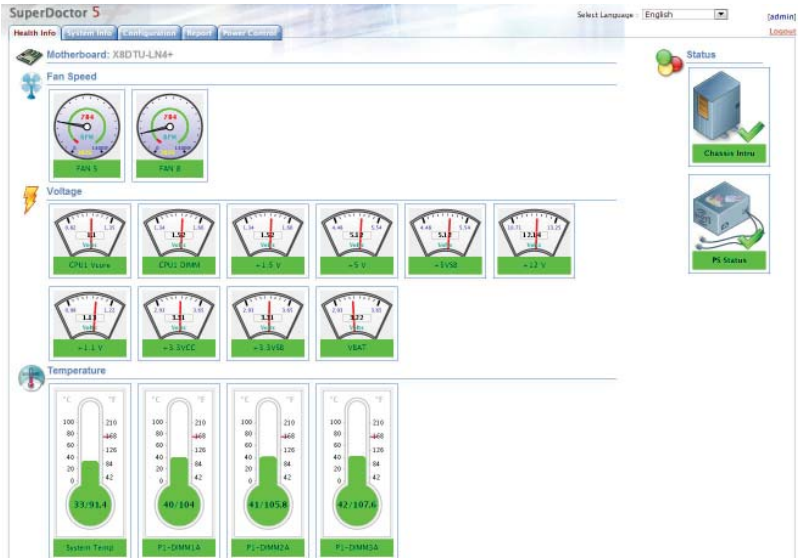
SuperDoctor® 5

The Supermicro SuperDoctor 5 is a program that functions in a command-line or web-based interface in Windows and Linux operating systems. The program monitors system health information such as CPU temperature, system voltages, system power consumption, fan speed, and provides alerts via email or Simple Network Management Protocol (SNMP).

SuperDoctor 5 comes in local and remote management versions and can be used with Nagios to maximize your system monitoring needs. With SuperDoctor 5 Management Server (SSM Server), you can remotely control power on/off and reset chassis intrusion for multiple systems with SuperDoctor 5 or IPMI. SD5 Management Server monitors HTTP, FTP, and SMTP services to optimize the efficiency of your operation.

Note: The default User Name and Password for SuperDoctor 5 is admin / admin.

Figure 5-9. SuperDoctor 5 Interface Display Screen (Health Information)

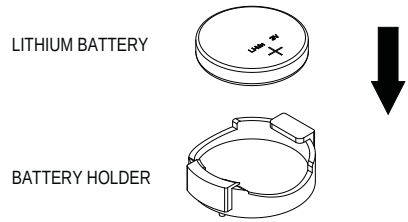


Note: The SuperDoctor 5 program and User's Manual can be downloaded from the Supermicro web site at http://www.supermicro.com/products/nfo/sms_sd5.cfm.

5-14 Onboard Battery

Caution: There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarites (see Figure 5-9). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer (CR2032). Dispose of used batteries according to the manufacturer's instructions.

Figure 5-10. Installing the Onboard Battery



Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

Notes

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC418XTA-R3240B chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows.

Tools Required: The only tool you will need to install components and perform maintenance is a Philips screwdriver.

6-1 Static-Sensitive Devices

Electrostatic discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from ESD damage.

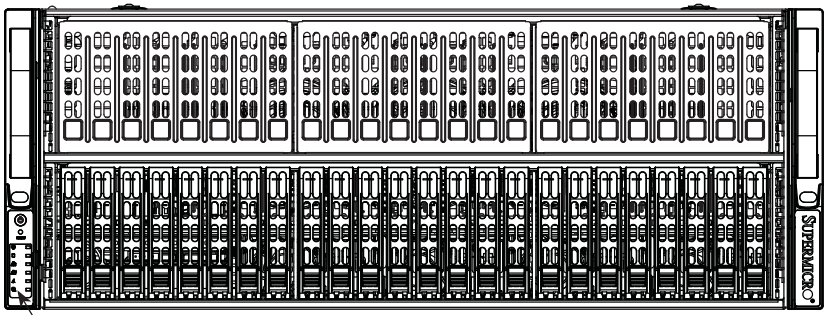
Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

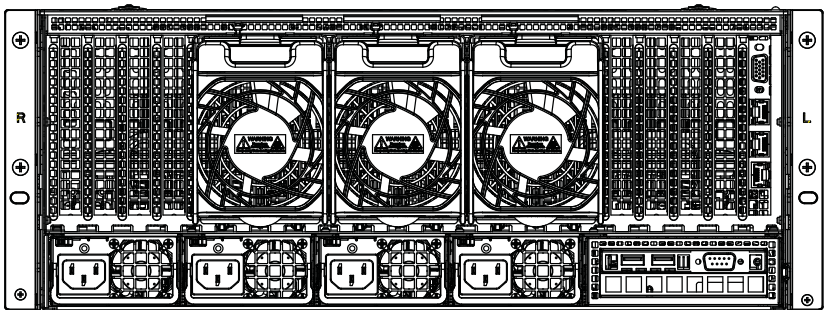
Unpacking

The serverboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

Figure 6-1. Front and Rear Chassis Views



Control Panel **Hard Drives (24)**



Power Supplies (4) **I/O Ports**

6-2 Control Panel

The control panel is located on the front left handle of the chassis.

See Chapter 3 for details on the LEDs and the control panel buttons.

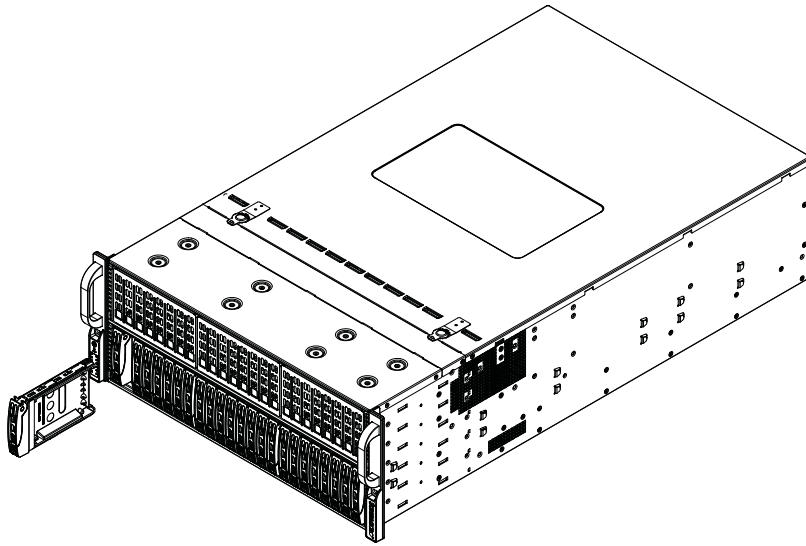
6-3 Installing Hard Drives

The SC418 supports a total of 24 hard disk drives, which are mounted in drive carriers and reside within the the hard drive bays. These drives are hot-swappable and can be removed or replaced without powering down the chassis. Enterprise SATA HDDs only are recommended.

Removing Hard Drives and their Carriers from the Hard Drive Bays

1. Press the release button on the drive carrier. This extends the drive carrier handle.
2. Use the handle to pull the drive and its carrier out of the chassis.

Figure 6-2. Removing a Hard Drive Carrier

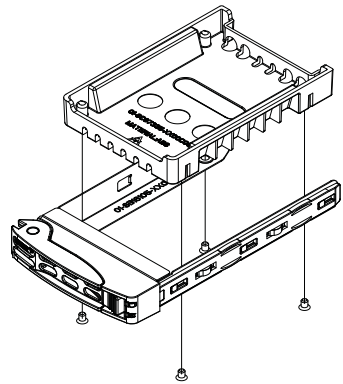


Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, visit the Supermicro Web site at http://www.supermicro.com/products/nfo/files/storage/SAS-1-CompList-110909.pdf

Installing a Hard Drive into a Drive Carrier

1. Insert a drive into the carrier with the PCB side facing down and the connector end toward the rear of the carrier.
2. Align the drive in the carrier so that the screw holes of both line up. Note that there are holes in the carrier marked “SATA” to aid in correct installation.
3. Secure the drive to the carrier with four screws as illustrated below.
4. Insert the drive carrier into its bay, keeping the carrier oriented so that the hard drive is on the top of the carrier and the release button is on the right side. When the carrier reaches the rear of the bay, the release handle will retract.
5. Push the handle in until it clicks into its locked position.

Figure 6-3. Removing a Dummy Drive from a Tray



6-4 Accessing the Inside of the System

Removing the Chassis Cover

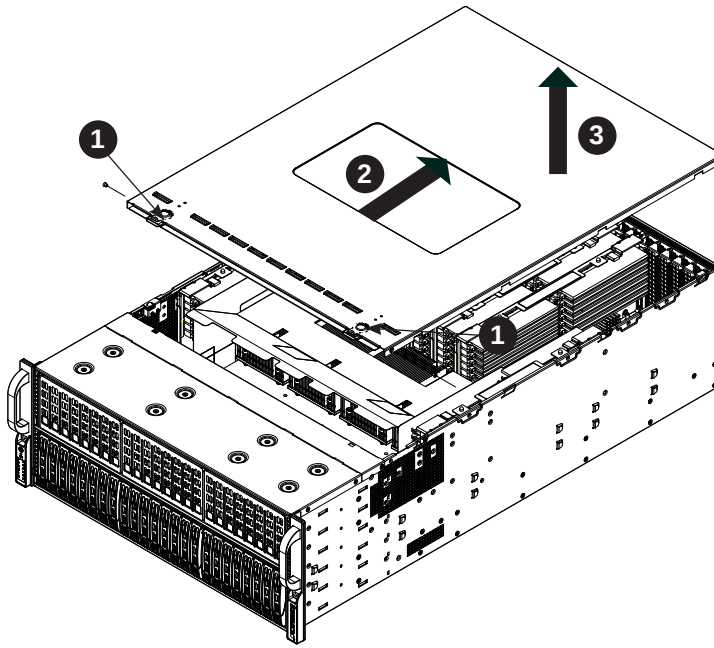
You will need to access the inside of the system to complete certain procedures such as replacing fans.

Removing the Chassis Cover

If working with componenets such as memory, processors or heatsinks, start by shutting the system down and disconnecting the AC power cord.

1. Depress the two release buttons on both sides of the cover.
2. Slide the cover toward the rear of the chassis
3. Lift the cover off the chassis.

Figure 6-4. Accessing the Inside of the System



Caution: Except for short periods of time, do NOT operate the server without the cover in place. The chassis cover must be in place to allow proper airflow and prevent overheating.

6-5 Installing the Air Shroud

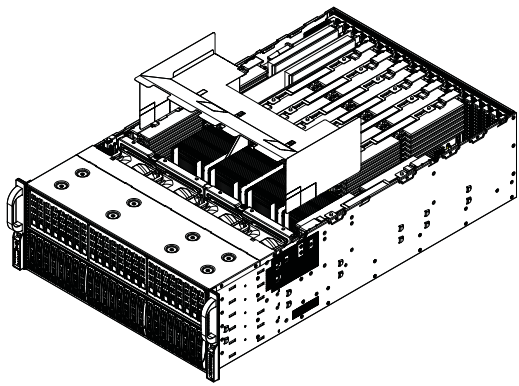
Air Shrouds

Air shrouds concentrate airflow to maximize fan efficiency. The SC418 chassis air shrouds do not require screws to set them up.

Installing the Air Shroud

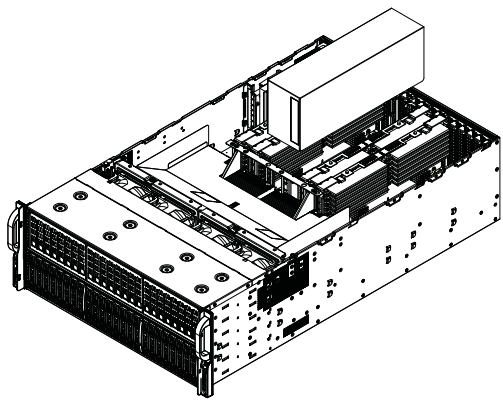
1. Confirm that all six fans are in place and working properly.
2. Place the first air shroud into the chassis. The air shroud sits behind the system fans.

Figure 6-5. Primary Air Shroud Placement



Note: when installing four memory modules as shown below, you must purchase a secondary air shroud from SMC (p/n 310-41805-0B).

Figure 6-6. Secondary Air Shroud Placement



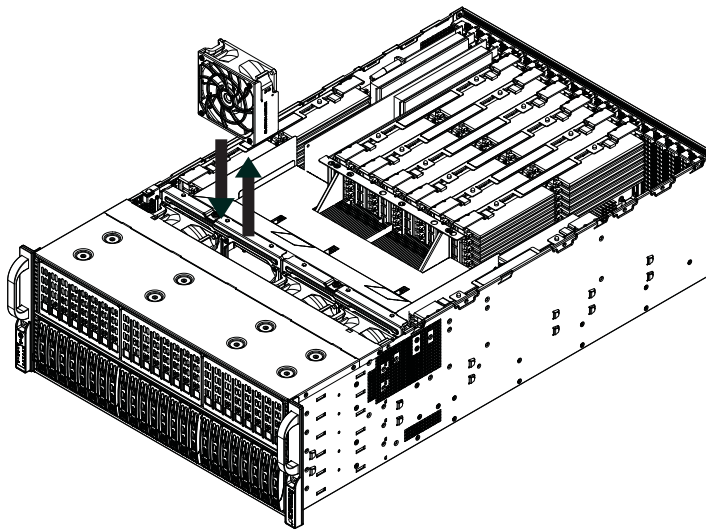
6-6 Cooling System

The SC418 chassis contains four 9-cm system fans that provide cooling for the chassis and three 8-cm exhaust fans at the rear of the chassis for expelling hot air. All fans are hot-swappable, there is no need to power down the system when replacing fans.

Replacing a System Fan

1. If necessary, open the chassis while the power is running to determine which fan has failed. (Never run the server for an extended period of time with the chassis cover open).
2. Remove the failed fan's power cord from the serverboard.
3. Lift the fan housing up and out of the chassis.
4. Gently push the fan upwards from underneath the fan housing to remove it.
5. Place the new fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans. Make sure that all four of the fan's rubber feet are in place.
6. Place the fan housing back in the chassis.
7. Reconnect the fan wiring.
8. Confirm that the fan is working properly before replacing the chassis cover.

Figure 6-7. Replacing a System Fan

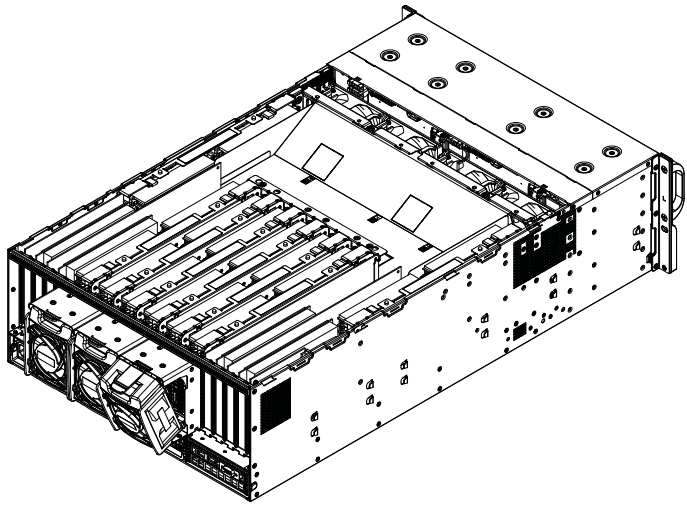


Replacing an Exhaust Fan

1. Determine which of the exhaust fans have failed.
2. Remove the cover from the chassis as described previously.
3. Lift the fan housing up and out of the chassis.
4. Remove the failed fan from the fan housing.
5. Place the new fan into the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans.
6. Place the fan housing back in the chassis.
7. Confirm that the fan is working properly before replacing the chassis cover.

Note: serverboard not shown in below image.

Figure 6-8. Replacing an Exhaust Fan



6-7 Power Supply

The 4048B-TRFT has a redundant, high-efficiency 1620 Watt power supply. This power supply is auto-switching capable, enabling it to automatically sense and operate at a 100v to 240v input voltage.

An amber light will be illuminated on the power supply when the power is off. An illuminated green light indicates that the power supply is operating. When blinking amber, it indicates the system power supply temperature has reached 63°C. The system will automatically power-down when the power supply temperature reaches 70°C and restart when the power supply temperature goes below 60°C.

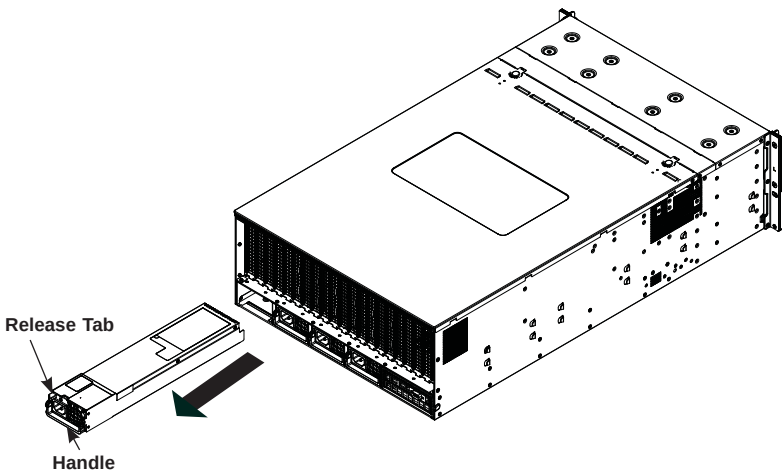
Power Supply Replacement

In the event that one of the power supplies needs to be replaced, one power supply unit can be removed without powering-down the system. Replacement power supply units may be ordered directly from Supermicro.

Changing the Power Supply

1. With the system running, unplug the AC power cord from the failed power supply module.
2. Push and hold the release tab on the back of the power supply.
3. Grasp the handle and pull the power supply out of its bay.
4. Push the replacement power supply module into the empty bay until it clicks into the locked position.
5. Plug the AC power cord back into the power supply module.

Figure 6-9. Replacing a Power Supply



Notes

Chapter 7

BIOS

7-1 Introduction

This chapter describes the AMI BIOS setup utility for the X10QBi Platform. It also provides the instructions on how to navigate the AMI BIOS setup utility screens. The AMI ROM BIOS is stored in a Flash EEPROM and can be easily updated.

Starting BIOS Setup Utility

To enter the AMI BIOS setup utility screens, press the <Del> key while the system is booting up.

> **Note**: In most cases, the <Del> key is used to invoke the AMI BIOS setup screen. There are a few cases when other keys are used, such as <F3>, <F4>, etc.

Each main BIOS menu option is described in this manual. The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured. Options in blue can be configured by the user. The right frame displays the key legend. Above the key legend is an area reserved for informational text. When an option is selected in the left frame, it is highlighted in white. Often informational text will accompany it.

> **Note**: The AMI BIOS has default informational messages built in. The manufacturer retains the option to include, omit, or change any of these informational messages.

The AMI BIOS setup utility uses a key-based navigation system called "hot keys." Most of the AMI BIOS setup utility "hot keys" can be used at any time during setup navigation. These keys include <F3>, <F4>, <Enter>, <ESC>, arrow keys, etc.

> **Notes**: Options printed in **Bold** are default settings.
>
> <F3> is used to load optimal default settings. <F4> is used to save the settings and exit the setup utility.

How To Change the Configuration Data

The configuration data that determines the system parameters may be changed by entering the AMI BIOS setup utility. This setup utility can be accessed by pressing <Delete> at the appropriate time during system boot.

Note: For AMI UEFI BIOS Recovery, please refer to the UEFI BIOS Recovery User Guide posted @ http://www.supermicro.com/support/manuals/.

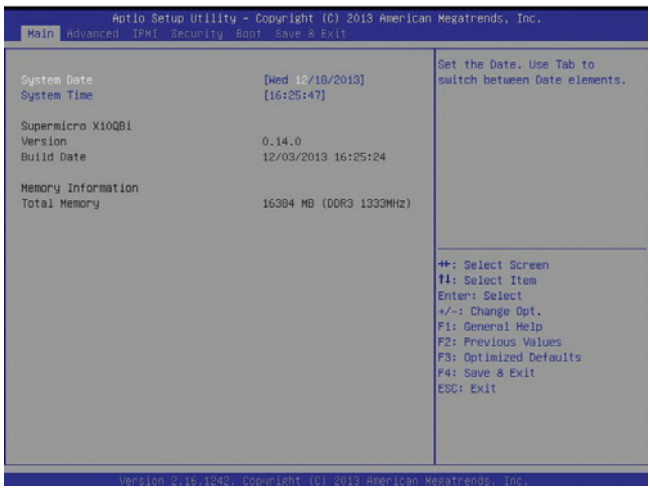
Starting the Setup Utility

Normally, the only visible Power-On Self-Test (POST) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the AMI BIOS setup utility. From the main menu, you can access the other setup screens. An AMI BIOS identification string is displayed at the left bottom corner of the screen below the copyright message.

Warning: Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall the manufacturer be liable for direct, indirect, special, incidental, or consequential damage arising from a BIOS update. If you have to update the BIOS, do not shut down or reset the system while the BIOS is being updated to avoid possible boot failure.

7-2 Main Setup

When you first enter the AMI BIOS setup utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab on the top of the screen. The Main BIOS Setup screen is shown below.


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Main Advanced IPMI Security Boot Save & Exit
System Date [Wed 12/18/2013]
System Time [16:25:47]
Supermicro X10QBi
Version 0.14.0
Build Date 12/03/2013 16:25:24
Memory Information
Total Memory 16384 MB (DDR3 1333MHz)
Set the Date. Use Tab to switch between Date elements.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.

The AMI BIOS Main menu displays the following information:

System Date/System Time

Use this option to change the system date and time using the arrow keys. Enter new values through the keyboard and press <Enter>. Press the <Tab> key to move between fields. The date must be entered in Day MM/DD/YYYY format. The time is entered in HH:MM:SS format. (**Note:** The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00.).

Supermicro X10QBi

Version

This item displays the SMC version of the BIOS ROM used in this system.

Build Date

This item displays the date that the BIOS setup utility was built.

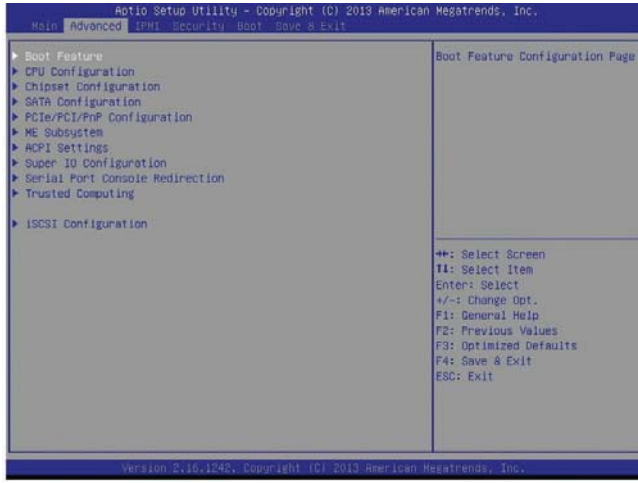
Memory Information

Total Memory

This item displays the amount of memory that is available in the system.

7-3 Advanced Setup Configurations

Select the Advanced tab to access the following submenu items.



▶Boot Features

Boot Configuration

Quiet Boot

Use this item to select bootup screen display between POST messages and the OEM logo. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The options are **Enabled** and Disabled.

AddOn ROM Display Mode

Use this item to set the display mode for the Option ROM. Select Keep Current to use the current AddOn ROM Display setting. Select Force BIOS to use the Option ROM display set by the system BIOS. The options are **Force BIOS** and Keep Current.

Bootup Num-Lock

Use this item to set the power-on state for the Numlock key. The options are Off and **On**.

Wait For 'F1' If Error

Select Enabled to force the system to wait until the 'F1' key is pressed when an error occurs. The options are Disabled and **Enabled**.

Interrupt 19 Capture

Interrupt 19 is the software interrupt that handles the boot disk function. When this item is set to Immediate, the BIOS ROM of the host adaptors will immediately capture Interrupt 19 at bootup and allow the drives that are attached to these host adaptors to function as bootable disks. If this item is set to Postponed, the BIOS ROM of the host adaptors will only capture Interrupt 19 during bootup from a legacy device. The options are **Immediate** and Postponed.

Power Configuration

Watch Dog Function

If enabled, the Watch Dog timer will allow the system to automatically reboot when a non-recoverable error that lasts for more than five minutes occurs. The options are Enabled and **Disabled.**

Power Button Function

If this feature is set to Instant Off, the system will power off immediately as soon as the user presses the power button. If this feature is set to 4 Seconds Override, the system will power off when the user presses the power button for 4 seconds or longer. The options are **Instant Off** and 4 Seconds Override.

Restore on AC Power Loss

Use this item to set the power state after a power outage. Select Stay Off for the system power to remain off after a power outage. Select Power On to turn on the system power after a power outage. Select Last State to allow the system to resume its last power state before a power outage. The options are Power On, Stay Off, and **Last State**.

▶CPU Configuration

This submenu displays the following CPU information as detected by the BIOS. It also allows the user to configure CPU settings.

▶Processor 0/Processor 1/Processor 2/Processor 3

This submenu displays the following information of the CPU installed in Socket 1, Socket 2, Socket 3, and Socket 4.

- Processor Socket
- Processor ID
- Processor Frequency

- Microcode Revision
- L1 Cache RAM
- L2 Cache RAM
- L3 Cache RAM
- Processor 0 Version
- Processor 1 Version
- Processor 2 Version
- Processor 3 Version

Clock Spread Spectrum

Select Enable to allow the BIOS to monitor and attempt to reduce the level of Electromagnetic Interference caused by the components whenever needed. The options are **Disable** and Enable.

Hyper-Threading

Select Enable to support Intel's Hyper-threading Technology to enhance CPU performance. The options are **Enable** and Disable.

Performance/Watt

Select Power Optimized to enable Intel® Turbo Boost Technology support when the Power Performance State P0 has lasted more than two seconds. The options are **Traditional** and Power Optimized.

Clear MCA (Available if supported by the OS & the CPU)

Select Yes to enable Machine-Check Architecture (MCA) support for CPU error logging. This feature is used in conjunction with the items below: "Execute Disable Bit," "VMS," "Enable SMX," and "Lock Chipset" for Virtualization media support. The default setting is **No.**

Execute-Disable Bit (Available if supported by the OS & the CPU)

Select Enable for Execute Disable Bit Technology support, which will allow the processor to designate areas in the system memory where an application code can execute and where it cannot, thus preventing a worm or a virus from flooding illegal codes to overwhelm the processor or damage the system during an attack. This feature is used in conjunction with the items: "Clear MCA," "VMX," "Enable SMX,"

and "Lock Chipset" for Virtualization media support. The default setting is **Enable**. (Refer to Intel and Microsoft websites for more information.)

VMX

Select Enable for CPU-related Virtualization support. This feature is used in conjunction with the items: "Clear MCA," "Enable SMX," and "Lock Chipset" for Virtualization media support. The options are **Enable** and Disable.

Enable SMX

Select Enable for Safer Mode Extensions (SMX) support to enhance data security in the processor. This feature is used in conjunction with the items: "Clear MCA," "VMX," and "Lock Chipset" for Virtualization media support. The options are Enable and **Disable**.

Lock Chipset

Select Enable to lock chipset register tables and set the register tables to "read-only" to prevent new data being written into the processor to ensure system security. This feature is used in conjunction with the items: "Clear MCA," "VMX," and "Enable SMX" for Virtualization media support. The options are **Enable** and Disable.

BIST Selection

Select Enable to configure Built-In_Self_Test (BIST) settings, which will allow the system to perform BIST testing on the processors at bootup. The options are Enable and **Disable**.

Hardware Prefetcher (Available when supported by the CPU)

If set to Enable, the hardware prefetcher will prefetch streams of data and instructions from the main memory to the L2 cache to improve CPU performance. The options are Disable and **Enable**.

Adjacent Cache Line Prefetch (Available when supported by the CPU)

Select Enable for the CPU to prefetch both cache lines for 128 bytes as comprised. Select Disable for the CPU to prefetch both cache lines for 64 bytes. The options are Disable and **Enable**.

> **Note**: Please reboot the system for changes on this setting to take effect. Please refer to Intel's web site for detailed information.

DCU (Data Cache Unit) Streamer Prefetcher (Available when supported by the CPU)

If set to Enable, the DCU Streamer Prefetcher will prefetch data streams from the cache memory to the DCU (Data Cache Unit) to speed up data accessing and processing for CPU performance enhancement. The options are Disable and **Enable**.

DCU IP Prefetcher

If this feature is set to Enable, the IP prefetcher in the DCU (Data Cache Unit) will prefetch IP addresses to improve network connectivity and system performance. The options are **Enable** and Disable.

DCU Mode

Use this feature to set the data-prefecting mode for the DCU (Data Cache Unit). The options are **32KB 8Way Without ECC** and 16KB 4Way With ECC.

Direct Cache Access (DCA)

Select Enable to use Intel DCA (Direct Cache Access) Technology to improve the efficiency of data transferring and accessing. The options are **Enable** and Disable.

DCA Prefetch Delay

A DCA Prefetcher is used with a TOE (TCP/IP Offload Engine) adapter to prefetch data in order to shorten execution cycles and maximize data processing efficiency. Prefetching data too frequently can saturate the cache directory and delay necessary cache access. This feature reduces or increases the frequency the system prefetches data. The options are [8], [16], **[32]**, [40], [48], [56], [64], [72], [80], [88], [96], [104], [112], [120].

Extended APIC (Advanced Programmable Interrupt Controller)

Based on Intel's Hyper-Threading architecture, each logical processor (thread) is assigned 256 APIC IDs (APIDs) in 8-bit bandwidth. When this feature is set to Enable, the APIC ID will be expanded from 8 bits to 16 bits to provide 512 APIDs to each thread to enhance CPU performance. The options are **Disable** and Enable.

AES-NI

Select Enable to use the Intel Advanced Encryption Standard (AES) New Instructions (NI) to ensure data security. The options are **Enable** and Disable.

Down Stream PECI (Platform Environment Control Interface)

Select Enable to allow the client server to interact with the host server directly to achieve better host-client communication in the PECI platform, which will result in power saving and energy use efficiency. The options are **Disable** and Enable.

▶ Advanced Power Management Configuration

Advanced Power Management Configuration

Power Technology

Select Energy Efficient to support power-saving mode. Select Custom to customize system power settings. Select Max Performance to optimize system

performance. Select Disabled to disable power-saving settings. The options are Disabled, **Energy Efficient**, and Custom. If the option is set to Custom, the following items will display:

▶ CPU P State Control (Available when Power Technology is set to Custom)

EIST (P-states)

EIST (Enhanced Intel SpeedStep Technology) allows the system to automatically adjust processor voltage and core frequency to reduce power consumption and heat dissipation. The options are Disabled and **Enabled**.

Turbo Mode

Select Enabled to use the Turbo Mode to boost system performance. The options are **Enabled** and Disabled.

P-state Coordination

This feature is used to change the P-state (Power-Performance State) coordination type. P-state is also known as "SpeedStep" for Intel processors. Select HW_ALL to change the P-state coordination type for hardware components only. Select SW_ALL to change the P-state coordination type for all software installed in the system. Select SW_ANY to change the P-state coordination type for a software program in the system. The options are **HW_All,** SW_ALL, and SW_ANY.

▶ CPU C State Control (Available when Power Technology is set to Custom)

C2C3TT (C2-to-C3 Transaction Timer)

This feature is used to set the transaction timer from C2 to C3. Enter 0 for Auto, which will allow the BIOS to configure the transaction timer automatically. The Default setting is **0 (Auto)**.

Package C State limit

Use this item to set the limit on the C-State package register. The options are C0/1 state, C2 state, **C6 (non-Retention) state**, and C6 (Retention) state.

CPU C3 Report

Select Enable to allow the BIOS to report the CPU C3 State (ACPI C2) to the operating system. During the CPU C3 State, the CPU clock generator is turned off. The options are Enable and **Disable.**

CPU C6 Report (Available when Power Technology is set to Custom)

Select Enable to allow the BIOS to report the CPU C6 state (ACPI C3) to the operating system. During the CPU C6 state, power to all cache is turned off. The options are **Enable** and Disable.

▶ CPU T State Control

ACPI (Advanced Configuration Power Interface) T-States

Select Enable to support CPU throttling by the operating system to reduce power consumption. The options are **Enable** and Disable.

▶ CPU Advanced PM (Power Management) Tuning

▶ Energy Perf (Performance) BIAS

Energy/Performance Bias

Use this feature to select an appropriate fan setting to achieve maximum system performance (with maximum cooling) or maximum energy efficiency with maximum power saving). The fan speeds are controlled by the firmware management via IPMI 2.0. The options are Performance, **Balanced Performance**, Balanced Power, and Energy Power.

Workload Configuration

Use this feature to set the power management setting optimized for the regular workload condition. The options are **Balanced (recommended)** and I/O sensitive.

▶ Socket RAPL (Running Average Power Limit) Configuration

Turbo Pwr (Power) Limit Lock

Select Enable to set the power use limit for the machine when it is running in the turbo mode. The options are Enable and **Disable**.

Long Pwr (Power) Limit Ovrd (Override)

Select Enable to support long-term power limit override. If this feature is disabled, BIOS will set the default value. The options are Enable and **Disable**.

Short Pwr (Power) Limit En (Enable)

Select Enable to support Short Duration Power Limit (Power Limit 2). The options are Enable and **Disable**.

▶Chipset Configuration

▶North Bridge

This feature is used to configure Intel North Bridge settings.

▶Integrated IO Configuration

IIO Configuration

Note: For IIO1 Configuration/IIO2 Configuration/IIO3 Configuration, please refer to Page 4-16.

PCIe Train by BIOS

Select Yes to resume the operation of a PCI-E device when the device is trapped and put on halt by a "wait-for-BIOS" command. The options are No and **Yes**.

PCIe Hot Plug

Select Enable to designate a PCI-E device for hot plugging, which will allow the user to replace this device without shutting down the system. The options are Disable, **Enable**, Auto, and Manual.

PCIe APCI Hot Plug

Select Enable to enable hot-plugging support for a PCI-E device in the APCI (Advanced Power Configuration Interface) environment, which will allow the user to replace this device in the APCI environment without shutting down the system. The options are **Disable,** Enable, and Per-Port.

MC (Memory Controller) BaseAddress Range

When this feature is set to Auto, system memory that resides within a certain BaseAddress range in the memory controller will be allocated for MultiCast testing. The default setting is **Auto**.

MC (Memory Controller) Index

Use this feature to set the memory-tuning criteria for the memory controller. The options are **12** and 20.

MC (Memory Controller) NUM (Number) Group

Use this feature to enter the group number of a memory controller. The options are 1, **8**, 32, and 64.

EV DFX (Device Function On-Hide) Feature

When this feature is set to Enable, the EV_DFX Lock Bits that are located on a processor will always remain clear during electric tuning. The options are **Disable** and Enable.

IIO0 Configuration

IOU0 (II0 PCIE Port 2)

This item configures the PCI-E port Bifuraction setting for a PCI-E port specified by the user. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

IOU1 (II0 PCIE Port 3)

This item configures the PCI-E port Bifuraction setting for a PCI-E port specified by the user. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

PCI-E Completion Timeout

Select Enable for PCI-E Completion Timeout support for electric tuning. The options are **Enable** and Disable.

PCI-E Completion Timeout Value

Use this item to set the PCI-E Completion Time-out value for electric tuning. Enter a value between 260ms to 900ms.

▶PCI Express Port 0 (DMI)

Note: For PCI Express Port 1A/Port 1B/Port 2A/Port 2B/Port 2C/Port 2D/ Port 3A/Port 3B/Port 3C/Port 3D, see the next section.

Use the items below to configure the PCI-E settings for a PCI-E port specified by the user.

The following items will display:

- PCI-E Port Link Status
- PCI-E Port Link Max
- PCI-E Port Link Speed

Link Speed

Use this item to select the PCI-E link speed for the PCI-E port specified by the user. The options are GEN1 (2.5 GT/s), GEN2 (5 GT/s), and **Auto**.

Override Max Link Width

Use this feature to set the link speed for a selected PCI-E port to override the maximum link-width which was previously set by PCI-Bifurcation. The options are **Auto**, x1, x2, x4, x8, and x16.

PCI-E Port DeEmphasis

Use this item to select the De-Emphasis control setting for a PCI-E port specified by the user. The options are **-6.0 dB** and -3.5 dB.

PCI-E ASPM Support

Select Enable to support the Active State Power Management (ASPM) level for a PCI-E port specified by the user. Select Disabled to disable ASPM support. The options are **Disable** and L1 Only.

Fatal Err (Error) Over

Select Enable to force the fatal error propogation to the II0 core-error-logic for the port specified by the user. The options are **Disable** and Enable.

Non-Fatal Err (Error) Over

Select Enable to force non-fatal error propogation to the II0 core-error-logic for the port specified by the user. The options are **Disable** and Enable.

Corr (Correctable) Err (Error) Over

Select Enable to force correctable error propogation to the II0 core-error-logic for the port specified by the user. The options are **Disable** and Enable.

L0s Support

When this item is set to Disable, II0 will never put its transmitter in the L0s state. The options are **Disable** and Enable.

▶PCI Express Port 1A/Port 1B/Port 2A/Port 2B/Port 2C/ Port 2D/Port 3A/Port 3B/Port 3C/Port 3D

Use the items below to configure the PCI-E settings for a PCI-E port specified by the user.

The following items will display:

- PCI-E Port Link Status
- PCI-E Port Link Max
- PCI-E Port Link Speed

PCI-E Port

Select Enable to enable the PCI-E port specified by the user. The options are **Auto**, Enable, and Disable.

Hot Plug Capable

Select Enable to enable hot-plugging support for the PCI-E port specified by the user, which will allow the user to replace the device installed on the port without shutting down the system. The options are **Disable** and Enable.

PCI-E Port Link

Select Disable to disable the link that is not involved in PCI training, but its CFG space is still active. The options are **Enable** and Disable.

Link Speed

Use this item to select the PCI-E link speed for the PCI-E port specified by the user. The options are GEN1 (2.5 GT/s), GEN2 (5 GT/s), and **Auto**.

Override Max Link Width

This item allows the user to set the link speed for a selected PCI-E port to override the maximum link-width which was previously set by PCI-Bifurcation. The options are **Auto**, x1, x2, x4, x8, and x16.

PCI-E Port DeEmphasis

Use this item to select the De-Emphasis control setting for a PCI-E port specified by the user. The options are **-6.0 dB** and -3.5 dB.

PCI-E ASPM Support

Select Enable to support the Active State Power Management (ASPM) level for a PCI-E port specified by the user. Select Disabled to disable ASPM support. The options are **Disable** and L1 Only.

Fatal Err (Error) Over

Select Enable to force the fatal error propogation to the II0 core-error-logic for the port specified by the user. The options are **Disable** and Enable.

Non-Fatal Err (Error) Over

Select Enable to force the non-fatal error propogation to the II0 core error logic for the port specified by the user. The options are **Disable** and Enable.

Corr (Correctable) Err (Error) Over

Select Enable to force the correctable error propogation to the II0 core-error-logic for the port specified by the user. The options are **Disable** and Enable.

L0s Support

When this item is set to Disable, II0 will never put its transmitter in the L0s state. The options are **Disable** and Enable.

PM ACPI Support

Select Enable to generate an _HPGPE message on a PM ACPI event. Select Disable to generate an MSI message. The options are **Disable** and Enable.

Gen3 (Generation 3) Eq (Equalization) Mode

Use this item to set PCI-E Gen3 Adaptive Equalization mode. The options are **Auto**, Enable Phase 0, 1, 2, 3; Disable Phase 0, 1, 2, 3; Enable Phase 1 Only, Enable Phase 0, 1 Only, and Advanced.

Gen3 (Generation 3) Spec (Specifics) Mode

Use this item to set the Specifics mode for PCI-E Gen3 device. The options are **Auto**, 0.70 July, 0.70 Sept and 071 Sept.

Gen3 (Generation 3) Phase2 Mode

Use this item to configure the Loop-count setting for PCI-E Gen3 Phase 2. The options are **Hardware Adaptive** and Manual.

Gen3 (Generation 3) DN TX Preset

Use this item to set the Preset mode for PCI-E Gen3 downstream transactions (from the master device to a slave device). The options are **Auto**, P0 (-6.0/0.0 dB), P1 (-3.5/0.0 dB), P2 (-4.5/0.0 dB), P3 (-2.5/0.0 dB), P4 (0.0/0.0 dB), P5 (0.0/2.0 dB), P6 (0.0/2.5 dB), P7 (-6.0 /3.5 dB), P8 (-3.5/3.5 dB), and P9 (0.0/3.5 dB).

Gen3 (Generation 3) DN TX Preset Hint

Use this item to set the Preset Hint mode for PCI-E Gen3 downstream transactions (from the master device to a slave device). The options are **Auto**, P0 (-6.0 dB), P1 (-7.0 dB), P2 (-8.0 dB), P3 (-9.0 dB), P4 (-10.0 dB) P5 (-11.0 dB), and P6 (-12.0 dB).

Gen3 (Generation 3) Up TX Preset

Use this item to set the Preset mode for PCI-E Gen3 upstream transactions (from a slave device to the master device).The options are **Auto**, P0 (-6.0/0.0 dB), P1 (-3.5/0.0 dB), P2 (-4.5/0.0 dB), P3 (-2.5/0.0 dB), P4 (0.0/0.0 dB), P5 (0.0/2.0 dB), P6 (0.0/2.5 dB), P7 (-6.0/3.5 dB), P8 (-3.5/3.5 dB), and P9 (0.0/3.5 dB).

Hide Port?

Select Yes to hide a selected PCI-E port from the OS. The options are **No** and Yes.

IIO1 Configuration/IIO2 Configuration/IIO3 Configuration

IOU0 (II0 PCIE Port 2)

This item configures the PCI-E port Bifuraction settings for a PCI-E port specified by the user. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

IOU1 (II0 PCIE Port 3)

This item configures the PCI-E port Bifuraction settings for a PCI-E port specified by the user. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

PCI-E Completion Timeout

Select Enable to issue a "time-out" command when PCI-E electric tuning is completed. The options are **Enable** and Disable.

PCI-E Completion Timeout Value

Use this item to set the PCI-E Completion Time-out value. Enter a value between 260ms to 900ms.

No PCI-E Port Active EC0

This is a workaround setting when there is no active PCI-E port detected. The options are **PCU Squelch exit ignore option**, and Reset the SQ FLOP by CSR optio.

▶PCI Express Port 0/Port 1A/Port 1B/Port 2A/Port 2B/Port 2C/Port 2D/Port 3A/Port 3B/Port 3C/Port 3D

Use the items below to configure the PCI-E settings for a PCI-E port specified by the user.

The following items will display:

- PCI-E Port Link Status
- PCI-E Port Link Max
- PCI-E Port Link Speed

PCI-E Port

Select Enable to enable the PCI-E port specified by the user. The options are **Auto**, Enable, and Disable.

Hot Plug Capable

Select Enable to enable hot-plugging support for the PCI-E port specified by the user to allow the user to replace the device installed on the port without shutting down the system. The options are **Disable** and Enable.

PCI-E Port Link

Select Disable to disable the link that is not involved in training activities, but its CFG is still active. The options are **Enable** and Disable.

Link Speed

Use this item to select the link speed for the PCI-E port specified by the user. The options are GEN1 (2.5 GT/s), GEN2 (5 GT/s), and **Auto**.

Override Max Link Width

Use this item to set the link speed for a selected PCI-E port to override the maximum link width that was set by PCI-bifurcation. The options are **Auto**, x1, x2, x4, x8, and x16.

PCI-E Port DeEmphasis

Use this item to select the De-Emphasis control setting for a PCI-E port specified by the user. The options are **-6.0 dB** and -3.5 dB.

PCI-E ASPM Support

Select Enable to support the Active State Power Management (ASPM) level for a PCI-E port specified by the user. Select Disabled to disable ASPM support. The options are **Disable** and L1 Only.

Fatal Err (Error) Over

Select Enable to force the fatal error propogation to the II0 core-error-logic for the port specified by the user. The options are **Disable** and Enable.

Non-Fatal Err (Error) Over

Select Enable to force the non-fatal error propogation to the II0 core-error-logic for the port specified by the user. The options are **Disable** and Enable.

Corr (Correctable) Err (Error) Over

Select Enable to force the correctable error propogation to the II0 core-error-logic for the port specified by the user. The options are **Disable** and Enable.

L0s Support

When this item is set to Disable, II0 will never put its transmitter in the L0s state. The options are **Disable** and Enable.

PM ACPI Support

Select Enable to generate an _HPGPE message on a PM ACPI event. Select Disable to generate an MSI message. The options are **Disable** and Enable.

Gen3 (Generation 3) Eq (Equalization) Mode

Use this item to set the "Adaptive Equalization" mode for PCI-E Generation 3 devices. The options are **Auto**, Enable Phase 0, 1, 2, 3; Disable Phase 0, 1, 2, 3; Enable Phase 1 Only, Enable Phase 0, 1 Only, and Advanced.

Gen3 (Generation 3) Spec (Specifics) Mode

Use this item to set the Specifics mode for PCI-E Generation 3 devices. The options are **Auto**, 0.70 July, 0.70 Sept and 071 Sept.

Gen3 (Generation 3) Phase2 Mode

Use this item to set the PCI-E Generation 3 Phase 2 mode. The options are **Hardware Adaptive** and Manual.

Gen3 (Generation 3) DN TX Preset

Use this item to set the Preset mode for PCI-E Gen3 downstream transactions (from the master device to a slave device). The options are **Auto**, P0 (-6.0/0.0 dB), P1 (-3.5/0.0 dB), P2 (-4.5/0.0 dB), P3 (-2.5/0.0 dB), P4 (0.0/0.0 dB), P5 (0.0/2.0 dB), P6 (0.0/2.5 dB), P7 (-6.0 /3.5 dB), P8 (-3.5/3.5 dB), and P9 (0.0/3.5 dB).

Gen3 (Generation 3) DN TX Preset Hint

Use this item to set the Preset Hint mode for PCI-E Gen3 downstream transactions (from the master device to a slave device). The options are **Auto**, P0 (-6.0 dB), P1 (-7.0 dB), P2 (-8.0 dB), P3 (-9.0 dB), P4 (-10.0 dB) P5 (-11.0 dB), and P6 (-12.0 dB).

Gen3 (Generation 3) Up TX Preset

Use this item to set the Preset mode for PCI-E Gen3 upstream transactions (from a slave device to the master device).The options are **Auto**, P0 (-6.0/0.0 dB), P1 (-3.5/0.0 dB), P2 (-4.5/0.0 dB), P3 (-2.5/0.0 dB), P4 (0.0/0.0 dB), P5 (0.0/2.0 dB), P6 (0.0/2.5 dB), P7 (-6.0/3.5 dB), P8 (-3.5/3.5 dB), and P9 (0.0/3.5 dB).

Hide Port?

Select Yes to hide the PCI-E port specified from the OS. The options are **No** and Yes.

▶Integrated IO Configuration

Enable I/OAT

Select Enable to enable Intel I/OAT (I/O Acceleration Technology), which significantly reduces CPU overhead by leveraging CPU architectural improvements and freeing the system resource for other tasks. The options are Enable and **Disable**.

No Snoop

Select Enable to support no-snoop mode for each CB device. The options are **Disable** and Enable.

Disable TPH

Select Enable to de-activate TLP Processing Hint support. The options are **Disable** and Enable.

▶ II0 Generation Configuration

The following information will display:

TXT DPR memory setting

Use this item to set TXT DPR settings. The options are 1M DPR, **3M DPR**, 64M DPR, 128M DPR, and 255M DPR.

Unhide QPI PMU Counter

Select Enable to use the PCI-Express counters. Select Disable to hide the PCI-Express counters. The options are **Disable** and 255M Enable.

IIO0/IIO1/IIO2/IIO3

II0 IOAPCI

Select Enable to support IIO IOAPIC (I/O Advanced Power Interface Configuration). The options are **Enable** and Disable.

▶ Intel VT for Directed I/O (VT-d)

Intel VT for Direct I/O (VT-d)

Isoc

Select Enable to enable Isochronous support to meet QoS (Quality of Service) requirements. This feature is especially important for Intel Virtualization technology. The options are Enable and **Disable**.

VTd (VT-d) Azalea VCp Optimization

Select Enable to enable Intel Virtualization Technology (VT-d) Direct I/O support to optimize Azalea VCp performance. The options are **Disable** and Enable.

Intel® VT for Directed I/O (VT-d)

Select Enable to enable Intel Virtualization Technology support for Direct I/O VT-d by reporting the I/O device assignments to the VMM (Virtual Machine Monitor) through the DMAR ACPI Tables. This feature offers fully-protected I/O resource sharing across Intel platforms, providing greater reliability, security and availability in networking and data-sharing. The options are **Enable** and Disable.

Interrupt Remapping

Select Enable to support Interrupt Remapping to enhance system performance. The options are **Enable** and Disable.

Pass Through DMA

Select Enable for the Non-Iscoh VT-d engine to pass through DMA (Direct Memory Access) to enhance system performance. The options are **Enable** and Disable.

ATS

Select Enable for the Non-Iscoh VT-d engine to pass through ATS to enhance system performance. The options are **Enable** and Disable.

Super Pages

Select Enable for VT-d Super-Pages support to improve system performance. The options are **Enable** and Disable.

Coherence Support

Select Enable for Non-Iscoh VT-d Engine Coherence support to improve system performance. The options are **Disable** and Enable.

PCI Express Global Options

Gen3 (Generation 3) Phase3 Loop Count

Use this feature to set the Loop-Count value for PCI-E Gen3 Phase3 operations. The options are 1, 4, **16**, and 256.

Skip Halt On DMI Degradation

Select Enable to avoid the system being put on hold during DMI width/link degradation. The options are **Disable** and Enable.

Power Down Unused Ports

Select Enable to disable the PCI-E ports that are not active. The options are **Disable**, Enable, HSX Disable

SLD WA Revision

Select Auto for the BIOS to automatically update the SLD WA revision status. The default setting is **Auto**.

▶QPI (Quick Path Interconnect) Configuration

QPI Status

The following information will display:

- Number of CPU
- Number of IIO
- LInk Speed
- Current QPI Link Frequency
- QPI Global MMIO Low Base/Limit
- QPI Global MMIO High Base/Limit
- QPI PCI-E Configuration Base/Siz (Size)

QPI Link Speed Mode

Use this feature to select the data transfer speed for QPI Link connections. The options are **Fast** and Slow.

Current QPI Link Frequency

Use this feature to select the desired frequency for QPI Link connections. The options are 6.4GB/s, 7.2GB/s, 8.0GB/s, **Auto,** and Use Per LInk Setting.

Link L0p Enable

Select Enable for Link L0p support. The options are Enable, **Auto,** and Disable.

Link L1p Enable

Select Enable for Link L1p support. The options are Enable, **Auto,** and Disable.

MMIO P2P Disable

Select No to prevent MMIO (Memory-Mapped I/0) P2P (PCI-E device to PCI-E device) signals from crossing the CPU socket. The options are **No** and Yes.

PPIN Opt-in

Select Yes to use the Protected-Processor Inventory Number (PPIN) in the system. The options are **No** and Yes.

Resource Auto Adjust

Select Enable for the PCI resource-requests for each CPU socket to be automatically adjusted on the need-base when the PCI resource allocator fails. The options are **Enable** and Disable.

▶QPI Per Socket Configuration

▶CPU 0/CPU 1/CPU 2/CPU 3

Bus Resource Allocation Ratio

Use this feature to set the bus resource-allocation ratio (from 0-8). The default setting is **1**.

IO Resource Allocation Ratio

Use this feature to set the IO resource-allocation ratio (from 0-8). The default setting is **1**.

MMIOL Resource Allocation Ratio

Use this feature to set the Memory-Mapped IO resource-allocation ratio (from 0-8). The default setting is **1**.

IIO UniPhy Disable

Select Yes to hide the entire UNIFY in L2 cache. The options are **No**, Yes, and Yes w/Memory Hot Add.

▶Memory Configuration

This section displays the following Integrated Memory Controller (IMC) information.

Promote Warnings

Select Enable to treat memory warnings as memory errors or memory faults for system-level debugging. The options are **Enable** and Disable.

DDR Speed

Use this feature to force a DDR3 memory module to run at a frequency other than what is specified in the specification. The options are **Auto**, 800, 1067, 1333, 1600, 1867, and 2133.

DDR Voltage Level

Select Force to 1.50V to force all DDR3 memory modules to operate at 1.50V. Select Force to 1.35V to force all DDR3 memory modules to operate at 1.35V. The options are **Auto**, Force to 1.50V, and Force to 1.35V.

Advanced Clk (Clock) Training

Select Enable for Advanced Clock Training support, which will allow the memory command line to be synchronized with the clock line to enhance memory performance. The options are **Enable** and Disable.

Perbit (Per-bit) Deskew Training

Select Enable for Perbit Deskew Training support, which will allow the memory controller to include various adjustable delay circuits in both Read and Write paths on a per-bit base for effective memory interface to maximize memory performance. The options are **Disable** and Enable.

DDT Timing Mode

Use this feature to set the DDT (Distributed Debugging Tool) Timing mode for the memory controller to enhance Graphical User Interface (GUI) support. The options are **Aggressive Timing** and Conservative Timing.

MxB Rank Sharing Mapping

Use this feature to select the address-mapping setting for memory-rank sharing to enhance extended multimedia platform performance. he options are **Maximum Performance** and Maximum Margin.

DIMM Vref. (Voltage Reference) Circuit

This feature allows the user to decide how to configure the voltage reference point (gate) for a DDR3 memory module. The options are Internal and **External**.

BIOS VMSE Reset

If this feature is set to Enable, BIOS settings pertaining to the Intel Scalable Memory Interconnect 2 (Intel SMI 2) controller will be reset to improve system performance. The options are Disable and **Enable**.

Phase Shedding

Select Enabled to enable Static Phase-Shedding support for DDR3 memory voltage regulators to improve memory performance. The options are **Auto**, Disabled and Enabled.

Multi-Threaded MRC (Memory Reference Code)

Select Enabled for the system to execute multi-threaded memory codes to improve memory performance. The options are **Auto**, Disabled and Enabled.

Rank Multiplication

Select Enabled to force the LRDIMM (Load-Reduced DIMM) memory modules to operate at the Rank-Multiplication mode for memory performance enhancement. The options are **Auto** and Enabled.

LRDIMM (Load-Reduction DIMM) Module Delay

When this item is set to Disabled, the MRC (Memory Regulator Controller) will not use SPD bytes 90-95 for module delay on LRDIMM memory. The options are **Disabled** and Auto.

Memory Type

Use this feature to select the memory type to be used in this system. The options are RDIMMs only, UDIMMs only, and **UDIMMs and RDIMMs**.

Rank Margin Tool

Select Enabled to activate the rank-margin tool for DDR3 memory training (memory tuning). The options are **Auto**, Disabled and Enabled.

RMT (Rank Margin Tool) Loop Count

Use this item to set RMT Loop Counter. The options are **Auto**, Disabled and Enabled.

Skip MemTest (Memory Test) on Fast Boot

Select Enabled to skip memory routine testing at bootup if this machine is set to Fast-boot mode. The options are **Auto**, Disabled and Enabled.

Attempt Fast Boot

Select Enabled to skip a portion of memory code testing to speed up system boot. The options are **Disabled** and Enabled.

BDAT

Select Enabled for BDAT (Binary Data Advanced Technology) support to increase system performance. The options are **Disabled** and Enabled.

Data Scrambling

Select Enabled to enable data scrambling to enhance system performance and data integrity. The options are Disabled and **Enabled**.

Scrambling Speed Low

Use this feature to set the data scrambling speed to low-32 bits. Enter a value between 0 and 32. The default setting is **0**.

Scrambling Speed High

Use this feature to set the data scrambling speed to high-32 bits. Enter a value between 0 and 32. The default setting is **0**.

Enable ADR

Select Enabled for ADR (Automatic Diagnostic Repository) support to enhance memory performance. The options are Enabled and **Disabled**.

VMSE Lockstep Mode

Select Enabled to support the VMSE Lockstep mode, which will support Lock step mode for the Intel Scalable Memory Interconnect 2 (Intel SMI 2) controller. The options are **2:1 Mode**.

NB Persistent Error

Select Enable to allow the system to properly handle the persistent errors occurred in the North Bridge. The options are Enable and **Disable**.

SB Persistent Error

Select Enable to allow the system to properly handle the persistent errors occurred in the South Bridge. The options are is **Enable** and Disable.

SB Error Threshold

Use this feature to set the threshold for South Bridge errors. When the number of South Bridge errors reaches beyond the threshold, the system will automatically take corrective actions. The default setting is **10**.

Link Failure Threshold

Use this feature to set the link failure threshold. When the number reaches beyond the threshold, the system will automatically take corrective actions. The default setting is **7**.

HA (Hash Mode) Early Write Post Mode

Select Enable to support memory hash-method-comparison mode when the system is running at the early stage of POST (Power-On-Self-Test). The options are is **Enable** and Disable.

MC Channel Hash Mode

Select Enabled to support the hash-method-comparison mode for the memory controller to improve memory performance. The options are Enabled and **Disabled**.

Unused Memory Channel Input

Select Enabled to allow input from unused memory channels. The options are **Enabled** and Disabled.

VMSE RMT (Rank Margin Tool)

Select Enabled to enable RMT support for the Intel Scalable Memory Interconnect 2 (Intel SMI 2) controller to improve memory performance. The options are Enabled and **Disabled**.

VMSE CPGC (Converged Pattern Generation and Checking) Pattern Length

Use this feature to set the CPGC pattern-length for the Intel Scalable Memory Interconnect 2 (Intel SMI 2) controller for memory parity-checking. The default setting is **0**.

Command 2 Data Tuning

Select Enabled to fine-tune electrical command paths from the host system to the memory-extension buffer (MXB). The options are **Enabled** and Disabled.

Jordon Creek Power Management

Select Enabled to activate power management features embedded in the Jordon Creek chip for the Intel Scalable Memory Interconnect 2 (Intel SMI 2) controller. The options are **Enabled** and Disabled.

MRC Debug Level

Use this feature to set the debugging level for memory reference codes, which are used for memory multiple threads initialization. The options are **L0**, L1 and L2.

Halt on Memory Fatal Error

Select Enabled to put the system on hold when a memory fatal error occurs. The options are **Enabled** and Disabled.

Promote MEM (Memory) Train Err (Error)

Select Enabled to promote warnings when a memory training-error occurs. The options are Enabled and **Disabled**.

Promote MEM (Memory) RAS Warnings

Select Enabled to promote warnings pertaining to RAS (Reliability, Availability, Serviceability) issues. The options are Enabled and **Disabled**.

Memory Test

When this feature is set to Enabled, memory tests will be performed in the system. The options are Enabled and **Disabled**.

JCK (Jordon Creek) per DIMM Parity Error Enable

Select Enabled for the system to monitor and keep track of DIMM parity errors occurred on each DIMM module. The options are Enabled and **Disabled**.

DRAM RAPL (Running Average Power Limit) Mode

Use this feature to set the run-time power-limit mode for DRAM modules. The options are Disabled, **VR Measured** and Estimated.

Closed Loop Thermal Throttling

Select Enabled to support Closed-Loop Thermal Throttling which will improve reliability and reduces CPU power consumption via automatic voltage control while the CPU are in idle states. The options are **Disabled** and Enabled.

Memory Hot Sense Thermal Throttling

Select Enabled to activate thermal-throttling when the hot-sensor reaches the predefined threshold via automatic voltage control when the CPU is in idle states. The options are **Disabled** and Enabled.

Memory Hot Output Thermal Throttling

Select Enabled to provide thermal-throttling warnings when the hot-sensor reaches the predefine threshold via automatic voltage control when the CPU is in idle states. The options are **Disabled** and Enabled.

MC DDT Mode

This feature sets the DDT (Distributed Debugging Tool) mode for the memory controller. The options are **Auto**, 100 Ohms, and 50 Ohms.

MRC (Memory Reference Code) Promote Warnings

Select Enabled for the system to provide MRC warnings to improve memory performance. The options are **Enabled** and Disabled.

Num (Number) of Sparing Transac (Transaction)

Use this feature to set the number of memory sparing transactions that will allow data to be written from a failing component to another component to ensure data security. The options are **4**.

PSMI Support

Select Enabled for Power Supply Management Interface (PSMI) support. The options are Enabled and **Disabled**.

VMSE Clock Stop

Select Enabled to de-activate the clock driver for the Intel Scalable Memory Interconnect 2 (Intel SMI 2) controller. The options are Enabled and **Disabled**.

Safe MC (Micro Code) BGF (Buffer Generation First-in-First-Out) PSV

Select Enabled to use the Micro-Code Safe mode to allow the onboard power control mechanism to supply power to the memory buffer on the on-demand basis in an effort to save power consumption. The options are Enabled and **Disabled**.

▶Memory Topology

This item displays the status of each DIMM module as detected by the BIOS.

- Node
- Channel
- DIMM Frequency

▶Memory RAS (Reliability_Availability_Serviceability) Configuration

Use this submenu to configure the following Memory RAS settings.

Memory RAS Configuration Setup

Socket 0 Branch 0/Socket 0 Branch1/Socket 1 Branch 0/Socket 1 Branch1/Socket 2 Branch 0/Socket 2 Branch1/Socket 3 Branch 0/Socket 3 Branch1/

Select Enable to enable the memory module installed on the socket specified by the user. The default setting is **Enable** and Disable.

Migration Spare

Use this feature to set the bit-mask of the riser card that is designated as a spare riser. The default setting is **0**.

Current Memory Speed

This item displays the current memory speed.

Mirroring

This item indicates if memory mirroring is supported by the motherboard. Memory mirroring creates a duplicate copy of the data stored in the memory to enhance data security.

Sparing

This item indicates if memory sparing is supported by the motherboard. Memory sparing enhances system performance.

Memory Rank Sparing

This item indicates if memory rank sparing is supported by the motherboard. Memory rank sparing enhances system performance.

Spare Error/Memory Correctable Thr (Threshold)

Use this feature to set the correctable error threshold for spare memory modules. The default setting is **32767**.

Leaky Bucket Low Bit

Use this feature to set the Low Bit value for the Leaky Bucket algorithm which is used to check the data transmissions between CPU sockets and the memory controller. The default setting is **40**.

Leaky Bucket High Bit

Use this feature to set the High Bit value for the Leaky Bucket algorithm which is used to check the data transmissions between CPU sockets and the memory controller. The default setting is **41**.

Publish SRAT (Static Resource Affinity Table)

Select Enable for the BIOS to report the ACPI SRAT table to the OS in order to enhance CPU and memory performance when the NUMA (Non-Uniformed Memory Access) is optimized. The options are **Enable** and Disable.

SRAT Memory Hot Plug

If t his item is set to Disable, memory hot-plugging support will be disabled and hot-plugging entries will be removed. This feature is used for the OS that does not support memory hot-plugging. The options are Enable and **Disable.**

SRAT CPU Hot Plug

If t his item is set to Disable, CPU hot-plugging support will be disabled and hot-plugging entries will be removed. This feature is used for the OS that does not support memory hot-plugging. The options are Enable and **Disable**.

SLIT (System Locality Information Table) One Hop Value

Select Enable for the BIOS to build the SLIT table to show the differences between the remote latency ratio and the local latency ratio to further optimize system performance for Linux Kernel 2.6 or later platforms. The default setting is **21**.

Memory Interleaving

Use this feature to set the DIMM memory interleaving mood. The options are NUMA (1-way) Node Interleave, 2-way Node Interleave, 4-way Interleave, 8 Way Interleaving, Inter-socket, and **Auto**.

Socket Interleave Below 4GB

Select Enabled for the memory above the 4G Address space to be split between two sockets. The options are Enable and **Disable**.

Channel Interleaving

Use this feature to set the DIMM channel interleaving mood. The options are **Auto**, 1 Way Interleave, 2 Way Interleave, 3, Way Interleave, and 4 Way Interleave.

Rank Interleaving

Use this feature to select a rank memory interleaving method. The options are **Auto**, 1 Way, 2 Way, 4, Way, and 8 Way.

DRAM Maintenance

Select Auto for the BIOS to automatically configure DRAM Refreshing and Patrol settings. The options are Manual and **Auto**.

pTRR (Pseudo Target Row Refresh) Support

Select Enabled for Pseudo TRR support which will allow the BIOS to assign an invalid address to a questionable memory module to prevent this memory module from being accessed by other components. The options are **Enabled** and Disabled.

Injection Probability

AMEI (Asynchroous MCA Error Injection) (AMEI) is a error-handling mechanism that allows the BIOS to report the MCA errors to the CPU core or the CPU before resuming normal operations. This item is used to set the threshold of the AMEI events beyond which the BIOS will report the error events before resuming operations. The options are 512, 1024, 1365, 1638, 1820, 1928, 2048, 2731, 3277, 3641, **4096**, 5461, 6554, 8192, 10923, 16384, 32768.

Demand Scrub

Demand Scrubbing is a process that allows the CPU to correct correctable memory errors found on a memory module. When the CPU or I/O issues a demand-read command, and the read data from memory turns out to be a correctable error, the error is corrected and sent to the requestor (the original source). Memory is updated as well. Select Enable to use Demand Scrubbing for ECC memory correction. The options are **Enable** and Disable.

Device Tagging

Select Enable to support device tagging. The options are **Disable** and Enable.

Memory Power Management

Select Enabled for memory power management support. The options are **Disabled** and Enabled.

Memory Rank Mask

Select Enabled to support memory rank in the memory controller. The options are **Disabled** and Enabled.

A7 Mode

Select Enabled to support A7 (Addressing) Mode to improve memory performance. The options are **Disable** and Enable.

DDDC Support

Select Enabled to enable Double-Device Data Correction (DDDC) support for the error-correction codes to correct memory errors caused by two failed DRAM devices. The options are **Disable** and Enable.

DDDC Wirekill (Wire-Kill)

Select Enabled for Double-Device Data Correction (DDDC) Wire-kill support which will disable the wire connection between two DRAM devices when they fail. The options are **Disable** and Enable.

DDDC Wirekill (Wire-Kill) Threshold

Use this feature to set the DDDC Wirekill threshold. When the memory errors reach the threshold,wire-connections between the failed DRAM modules will be disconnected. The options are **Disable** and Enable.

Apply Memory RAS (Reliability-Availability-Serviceability Policy Globally

When this item is set to Enabled, the configuration settings for memory sparing, Mirroring, DDDC, Device-Tagging will be applied to all nodes in the system. The options are **Disable** and Enable.

Memory Mirroring

Select Enable to enable memory-mirroring support which will create a duplicate copy of the data stored in the memory to enhance data security. The options are **Disable** and Enable.

▶South Bridge

This feature is used to configure Intel South Bridge settings.

▶USB Configuration

The following USB items will display.

- USB Module Version
- USB Devices

Legacy USB Support (Available when USB Functions is not Disabled)

Select Enabled to support legacy USB devices. Select Auto to disable legacy support if USB devices are not present. Select Disabled to have USB devices available for EFI (Extensive Firmware Interface) applications only. The settings are Disabled, **Enabled** and Auto.

U**SB 3.0 Support**

Select Enabled for USB 3.0 support. The options are Disabled and **Enabled**.

XHCI Hand-Off

This feature is a work-around solution for operating systems that do not support XHCI (Extensible Host Controller Interface) hand-off. The XHCI ownership change should be claimed by the XHCI driver. The settings are **Enabled** and Disabled.

EHCI Hand-Off

This item is for operating systems that do not support Enhanced Host Controller Interface (EHCI) hand-off. When this item is enabled, EHCI ownership change will be claimed by the EHCI driver. The settings are Enabled and **Disabled**.

USB Mass Storage Driver Support

Select Enabled for USB mass storage device support. The options are Disabled and **Enabled**.

Port 60/64 Emulation

Select Enabled for I/O port 60h/64h emulation support which will provide complete USB keyboard legacy support for the operating system that does not support Legacy USB devices. The options are Disabled and **Enabled**.

USB Hardware Delays and Time-outs

U**SB Transfer Time-out**

Use this feature sets the USB Transfer Time-out values for control, bulk, and interrupt transfers. The default setting is **20 sec (seconds)**.

Device Reset Time-out

Select Auto for the BIOS to automatically configure the delay maximum time setting before a USB device properly reports itself to the system. The options are **Auto** and Manual.

Device Power-up Delay

Use this feature sets the maximum time-out value for initialization of USB mass storage devices. The options are 10 Sec, **20 sec**, 30 Sec, and 40 Sec (seconds).

▶SATA Configuration

When this submenu is selected, the AMI BIOS automatically detects the presence of the SATA Devices and displays the following items:

SATA Controllers

This item enables or disables the built-in SATA controllers on the motherboard. The options are **Enabled** and Disabled.

Configure SATA As

Use this feature to configure the SATA mode for a devices installed in the SATA port specified by the user. The options are IDE, **AHCI** and RAID.

▶Software Feature Mask Configuration

Low Power Device Detection Support

Select Enabled for the low-power device to be detected by the BIOS. The options are **E**nabled and **Disabled**.

Aggressive LPM Support

Select Enabled for the PCH chip to aggressively enter the Link-Power state. The options are **Enabled** and Disabled.

Alternate ID (Available when RAID is selected in the item above-"Configure SATA as")

Select Enabled for the port specified by the user to report an alternate ID to the system. The options are **Enabled** and Disabled.

SATA Port 0/SATA Port 1/SATA Port 2/SATA Port 3/SATA Port 4/SATA Port 5

This section allows the user to configure the following settings for the SATA port specified by the user.

Software Preserve

Port 0/Port 1/Port 2/Port 3/Port 4/Port 5

Select Enabled to enable the port specified by the user. The options are **Enabled** and Disabled.

Hot Plug (Available when AHCI or RAID is selected in the item above-"Configure SATA as")

Select Enabled to support Hot-plugging for the selected SATA port which will allow the user to replace a device without shutting down the system. The options are Enabled and **Disabled.**

Port Multiplier (Available when AHCI or RAID is selected in the item above-"Configure SATA as")

Select Enabled to support port-multiplier for the SATA port specified by the user. The options are Enabled and **Disabled.**

Spin Up Device (Available when AHCI or RAID is selected in the item above-"Configure SATA as")

Select Enabled to allow the PCH to start a COMRESET initialization (from 0 to 1 on an edge detect) to the device. The options are Enabled and **Disabled**.

SATA Device Type

Use this feature to configure the SATA device type for the device installed on selected a SATA port for use of IDE mode, RAID mode or AHCI mode. The options are Solid State Device and **Hard Disk Drive**.

▶PCIe/PCI/PnP Configuration

PCI Latency Timer

Use this feature to set the latency timer of each PCI device installed on a PCI bus. Select 64 to set the PCI latency to 64 PCI clock cycles. The options are **32**, 64, 96, 128, 160, 192, 224 and 248 (PCI Bus Clocks).

VGA Palette Snoop

Select Enabled to support VGA palette register snooping which will allow the PCI cards that do not contain their own VGA color palette to examine the video cards palette and mimic it for proper color display. The options are **Disabled** and Enabled.

PERR# Generation

Select Enabled to allow a PCI device to generate a PERR number for a PCI Bus Signal Error Event. The options are Enabled and **Disabled**.

SERR# Generation

Select Enabled to allow a PCI device to generate an SERR number for a PCI Bus Signal Error Event. The options are Enabled and **Disabled**.

Maximum Payload

Select Auto to allow the system BIOS to automatically set the maximum payload value for a PCI-E device to enhance system performance. The options are **Auto**, 128 Bytes and 256 Bytes.

Maximum Read Request

Select Auto to allow the system BIOS to automatically set the maximum Read Request size for a PCI-E device to enhance system performance. The options are **Auto**, 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, and 4096 Bytes.

ASPM Support

This feature allows the user to set the Active State Power Management (ASPM) level for a PCI-E device. Select Force L0s to force all PCI-E links to operate at L0s state. Select Auto to allow the system BIOS to automatically set the ASPM level for the system. Select Disabled to disable ASPM support. The options are **Disabled**, Force L0s, and Auto.

Warning: Enabling ASPM support may cause some PCI-E devices to fail!

Above 4G Decoding (Available if the system supports 64-bit PCI decoding)

Select Enabled to decode a PCI device that supports 64-bit in the space above 4G Address. The options are Enabled and **Disabled**.

CPU1 Slot 1 PCI-E 3.0 x8 OPROM/CPU1 Slot 2 PCI-E 3.0 x16 OPROM/CPU2 Slot 3 PCI-E 3.0 x8 OPROM/CPU2 Slot 4 PCI-E 3.0 x16 OPROM/CPU2 Slot 5 PCI-E 3.0 x8 OPROM/CPU3 Slot 6 PCI-E 3.0 x8 OPROM/CPU3 Slot 7 PCI-E 3.0 x8 OPROM/CPU4 Slot 8 PCI-E 3.0 x8 OPROM/CPU3 Slot 9 PCI-E 3.0 x16 OPROM/CPU4 Slot 10 PCI-E 3.0 x8 OPROM/CPU4 Slot 11 PCI-E 3.0 x16 OPROM

Select Enabled to enable Option ROM support to boot the computer using a device installed on the slot specified by the user. The options are **Enabled** and Disabled.

Launch Video OPROM Policy

This feature controls how the system executes UEFI (Unified Extensible Firmware Interface), and legacy storage OPROM. Select Legacy Only to boot the system using a legacy device installed in a PCI slot. The options are Do not launch, UEFI Only, Legacy Only, **Legacy first**, and **UEFI first**.

VGA Priority

This feature allows the user to select the graphics adapter to be used as the primary boot device. The options are **Onboard** and Offboard.

Onboard LAN OpROM (Option ROM) Select

Select iSCSI to use the iSCSI Option ROM to boot the computer using a iSCSI network device. Select PXE (Preboot Execution Environment) to use an PXE Option ROM to boot the computer using a PXE network device. The options are iSCSI and **PXE**.

Load Onboard LAN1 Option ROM, Load Onboard LAN2 Option ROM

Select Enabled to enable the onboard LAN1/LAN2 Option ROM. This is to boot the computer using a network device. The default setting for LAN1 Option ROM is **Enabled**, and the default setting for LAN2 Option ROM is **Disabled**.

▶ME (Management Engine) Subsystem

This feature displays the following ME Subsystem Configuration settings.

General ME Configuration

- Operational Firmware Version
- Recovery Firmware Version
- ME Firmware Features
- ME Firmware Status #1
- ME Firmware Status #2

- Current State
- Error Code

▶ACPI Settings

Use this feature to configure Advanced Configuration and Power Interface (ACPI) power management settings for your system.

Enable ACPI Auto Configuration

Select Enabled to allow BIOS to automatically configure ACPI settings. The options are Enabled and **Disabled**.

Enable Hibernation

Select Enabled to support system hibernation which will allow the system to enter the hibernation state (OS/S4 Sleep) state. This feature may not work well with some operating systems. The options are **Enabled** and Disabled.

ACPI Sleep State

Use this feature to select the ACPI State when the system is in sleep mode. Select S1 (CPU Stop Clock) to erase all CPU caches and stop executing instructions. Power to the CPU(s) and RAM is maintained, but RAM is refreshed. Select Suspend Disabled to use power-reduced mode. Power will only be supplied to limited components (such as RAMs) to maintain the most critical functions of the system. The options are **S1 (CPU Stop Clock)** and Suspend Disabled.

Lock Legacy Resources

Select Enabled to lock resources of legacy devices. The options are **Disabled** and Enabled.

▶Super IO Configuration

Super IO Chip: This item displays the Super IO chip used in the motherboard.

▶Serial Port 0 Configuration

Serial Port

Select Enabled to enable a serial port specified by the user. The options are **Enabled** and Disabled.

Device Settings

This item displays the settings of Serial Port 1 (COM).

Change Settings

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 1 (COM). Select Disabled to prevent the serial port from accessing any system resources. When this option is set to Disabled, the serial port becomes unavailable. The options are **Auto**, IO=3F8h; IRQ=4; IO=3F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12; IO=2F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12; IO=3E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12; IO=2E8h; IRQ=IRQ=3, 4, 5, 6, 7, 10, 11, 12.

Device Mode

Use this feature to select the desired mode for a serial port specified. The options are **24MHz/13** and 24MHz.

▶Serial Port 1 Configuration

Serial Port

Select Enabled to enable a serial port specified by the user. The options are **Enabled** and Disabled.

Device Settings

This item displays the settings of Serial Port 1.

Change Settings

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 2 (SOL). Select Disabled to prevent the serial port from accessing any system resources. When this option is set to Disabled, the serial port becomes unavailable. The options are **Auto**, O=2F8h; IRQ=3; IO=3F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12; IO=2F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12; IO=3E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12; IO=2E8h; IRQ=IRQ=3, 4, 5, 6, 7, 10, 11, 12.

Device Mode

Use this feature to select the desired mode for a serial port specified. The options are **24MHz/13** and 24MHz.

Serial Port 2 Attribute

Use this feature to select the attribute for this serial port. The options are **COM/SOL** (Serial On LAN), and COM.

▶COM1 Console Redirection

COM 1 Console Redirection

This submenu allows the user to configure the following Console Redirection settings for this port.

Console Redirection

Select Enabled for Console Redirection support. The options are Enabled and **Disabled**.

COM2/SOL Console Redirection

This submenu allows the user to configure the following Console Redirection settings for the SOL Port specified by the user.

Console Redirection

Select Enabled to use the SOL Port for Console Redirection. The options are **Enabled** and Disabled.

▶Console Redirection Settings

This feature allows the user to specify how the host computer will exchange data with the client computer, which is the remote computer used by the user.

Terminal Type

This feature allows the user to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII Character set. Select VT100+ to add color and function key support. Select ANSI to use the Extended ASCII Character Set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are ANSI, VT100, **VT100+**, and VT-UTF8.

Bits Per second

Use this feature to set the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in the host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 38400, 57600 and **115200** (bits per second).

Data Bits

Use this feature to set the data transmission size for Console Redirection. The options are 7 Bits and **8 Bits**.

Parity

A parity bit can be sent along with regular data bits to detect data transmission errors. Select Even if the parity bit is set to 0, and the number of 1's in data bits

is even. Select Odd if the parity bit is set to 0, and the number of 1's in data bits is odd. Select None if you do not want to send a parity bit with your data bits in transmission. Select Mark to add a mark as a parity bit to be sent along with the data bits. Select Space to add a Space as a parity bit to be sent with your data bits. The options are **None**, Even, Odd, Mark and Space.

Stop Bits

A stop bit indicates the end of a serial data packet. Select 1 Stop Bit for standard serial data communication. Select 2 Stop Bits if slower devices are used. The options are **1** and 2.

Flow Control

This feature allows the user to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start sending data when the receiving buffer is empty. The options are **None** and Hardware RTS/CTS.

VT-UTF8 Combo Key Support

Select Enabled to enable VT-UTF8 Combination Key support for ANSI/VT100 terminals. The options are **Enabled** and Disabled**.**

Recorder Mode

Select Enabled to capture the data displayed on a terminal and send it as text messages to a remote server. The options are **Disabled** and Enabled.

Resolution 100x31

Select Enabled for extended-terminal resolution support. The options are Disabled and **Enabled**.

Legacy OS Redirection Resolution

Use this feature to select the number of rows and columns used in Console Redirection for legacy OS support. The options are 80x24 and **80x25**.

Putty KeyPad

This feature selects Function Keys and KeyPad settings for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SCO, ESCN, and VT400.

Redirection After BIOS Post

Use this feature to enable or disable legacy console redirection after BIOS POST. When set to Bootloader, legacy console redirection is disabled before booting

the OS. When set to Always Enable, legacy console redirection remains enabled when booting the OS. The options are **Always Enable** and Bootloader.

Serial Port for Out-of-Band Management/Windows Emergency Management Services (EMS)

The submenu allows the user to configure Console Redirection settings to support Out-of-Band Serial Port management.

Console Redirection (for EMS)

Select Enabled to use a COM Port selected by the user for Console Redirection. The options are **Enabled** and Disabled.

▶Console Redirection Settings (for EMS)

This feature allows the user to specify how the host computer will exchange data with the client computer, which is the remote computer used by the user.

Out-of-Band Management Port

The feature selects a serial port used by the Microsoft Windows Emergency Management Services (EMS) to communicate with a remote server. The options are **COM1 Console Redirection** and COM2/SOL Console Redirection.

Terminal Type

This feature allows the user to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII character set. Select VT100+ to add color and function key support. Select ANSI to use the extended ASCII character set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are ANSI, VT100, VT100+, and **VT-UTF8**.

Bits Per Second

This item sets the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in the host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 57600, and **115200** (bits per second).

Flow Control

This feature allows the user to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start sending data when the receiving buffer is empty. The options are **None,** Hardware RTS/CTS, and Software Xon/Xoff.

The setting for each these features is displayed:

Data Bits, Parity, Stop Bits

▶Trusted Computing (Available when a TPM device is detected by the BIOS)

Configuration

Security Device Support

Select Enabled on this item and enable the TPM jumper on the motherboard to enable onboard security devices to improve data integrity and network security. The options are **Enabled** and Disabled.

TPM (Trusted-Platform Module) State

Select Enabled to enable TPM security settings to improve data integrity and network security. The options are Disabled and **Enabled**.

Pending Operation

Use this item to schedule an operation for the security device. The options are **None**, Enable Take Ownership, Disable Take Ownership, and TPM Clear.

Note: The computer will reboot in order to execute the pending commands and change the state of the security device.

Current Status Information: This item displays the information regarding the current TPM status.

TPM Enable Status

This item displays the status of TPM Support to indicate if TPM is currently enabled or disabled.

TPM Active Status

This item displays the status of TPM Support to indicate if TPM is currently active or deactivated.

TPM Owner Status

This item displays the status of TPM Ownership.

▶iSCSI Configuration

This item displays iSCSI configuration information:

iSCSI Initiator Name

This item displays the name of the iSCSI Initiator, which is a unique name used in the world. The name must use IQN format. The following actions can also be performed:

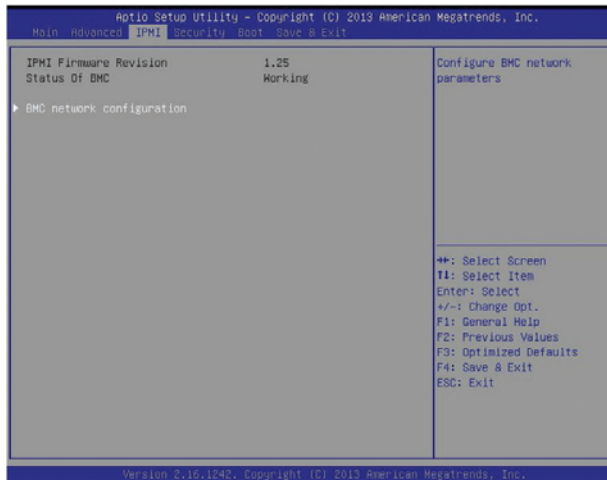
▶Add an Attempt

▶Delete Attempts

▶Change Attempt Order

7-4 IPMI

Select the IPMI (Intelligent Platform Management Interface) tab to access the following submenu items.


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Main Advanced IPMI Security Boot Save & Exit
IPMI Firmware Revision 1.25
Status Of BMC Working
BMC network configuration
Configure BMC network parameters
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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These items indicates your system IPMI firmware revision number and status.

- IPMI Firmware Revision
- IPMI Status

▶BMC Network Configuration

LAN Channel 1: This feature allows the user to configure the settings for LAN1 Port.

Configuration Address Source

This feature allows the user to select the source of the IP address for this computer. If Static is selected, you will need to know the IP address of this computer and enter it to the system manually in the field. If DHCP is selected, the BIOS will search for a DHCP (Dynamic Host Configuration Protocol) server in the network that is attached to and request the next available IP address for this computer. The options

are **DHCP** and Static. The following items are assigned IP addresses automatically if DHCP is selected, or can be configured manually if Static is selected.

Station IP Address

This item displays the Station IP address for this computer. This should be in decimal and in dotted quad form (i.e., 192.168.10.253).

Subnet Mask

This item displays the sub-network that this computer belongs to. The value of each three-digit number separated by dots should not exceed 255.

Station MAC Address

This item displays the Station MAC address for this computer. Mac addresses are 6 two-digit hexadecimal numbers.

Router IP Address

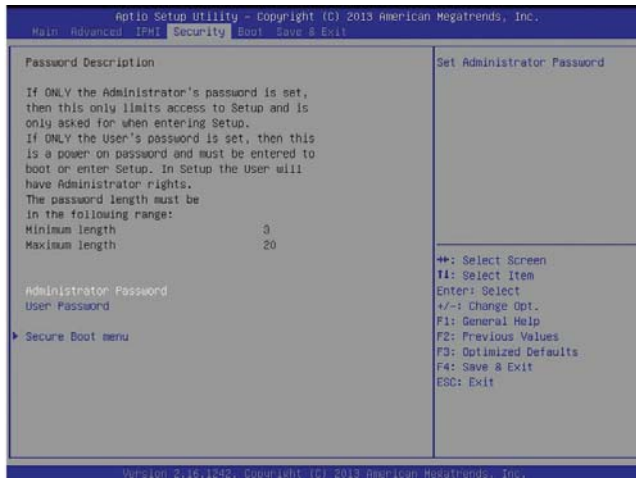
This item displays the Router IP address for this computer. This should be in decimal and in dotted quad form (i.e., 192.168.10.253).

Router MAC Address

This item displays the Router MAC address for this computer.

7-5 Security

This menu allows the user to configure the following security settings for the system.


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Main Advanced IPMI Security Boot Save & Exit
Password Description
If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.
If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights.
The password length must be in the following range:
Minimum length 3
Maximum length 20
Administrator Password
User Password
Secure Boot menu
Set Administrator Password
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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Administrator Password

Use this feature to set the administrator password which is required to enter the BIOS setup utility. The length of the password should be from 3 characters to 20 characters long.

User Password

Use this feature to set a user password which is required to log into the system and to enter the BIOS setup utility. The length of the password should be from 3 characters to 20 characters long.

▶Secure Boot Menu

The following items will display:

- System Mode
- Secure Boot

Secure Boot Support

Select Enable for Secure Boot support to ensure system security at bootup. The options are Enabled and **Disabled**.

Secure Boot Mode

This feature allows the user to select the desired Secure Boot mode for the system. The options are Standard and **Custom**.

▶Key Management

Default Keys Provision

Select Enable to install all manufacture defaults for the following system security settings. The options are **Disabled** and Enabled.

▶Enroll All Factory Default Keys

This feature allows the user to install all factory-security default keys in your system.

Platform Key (PK)

▶Delete PK (Platform key)

Select <Yes> to confirm deletion of the Platform Key from the NVRAM (Non-Volatile RAM)..

▶Set New PK (Platform Key)

Select <Yes> to load default factory platform keys to your system. Select No to load the default settings from other sources.

Key Exchange Key Database (KEK)

▶Delete KEK (Key Exchange Key)

Select <Yes> to confirm deletion of the KEK from the NVRAM (Non-Volatile RAM).

▶Set New KEK (Key Exchange Key)

Select <Yes> to confirm that a new KEK will be set in the NVRAM (Non-Volatile RAM).

▶Append KEK (Key Exchange Key)

Select <Yes> to load the new KEK from the manufacture defaults. Select <No> to load the new KEK from other sources.

Authorized Signature Database (DB)

▶Delete DB (DataBase)

Select <Yes> to confirm deletion of a database from the NVRAM (Non-Volatile RAM).

▶Set New DB (DataBase)

Select <Yes> to confirm that a new database will be set in the NVRAM (Non-Volatile RAM).

▶Append DB (DataBase)

Select <Yes> to load the new database from the manufacture defaults. Select <No> to load the new database from other sources.

Forbidden Signature Database (DBX)

▶Delete DBX

Select <Yes> to confirm deletion of the DBX files from the Non-Volatile RAM (NVRAM).

▶Set New DBX

Select <Yes> to confirm that the new DBX files will be downloaded to the Non-Volatile RAM (NVRAM).

▶Append DBX (DataBase Timer)

Select <Yes> to load the new DBX files from the manufacture defaults. Select <No> to load the new DBX files from other sources.

▶Image Execution Policy

Internal FA

Select Always Execute for the BIOS to always execute Image-Execution Policy commands on each device path when system security is compromised. The default setting is **Always Execute**.

Option ROM

Select Deny Execute to prevent the BIOS from executing Option ROM commands to boot up a system from a network device when system security is compromised. The options are Always Execute, Always Deny, Allow Execute, Defer Execute, **Deny Execute** and Query User.

Removable Media

Select Deny Execute to prevent the BIOS from executing critical system commands issued by a removable device when system security is compromised. The options are Always Execute, Always Deny, Allow Execute, Defer Execute, **Deny Execute** and Query User.

Fixed Media

Select Deny Execute to prevent the BIOS from executing critical system commands issued by a fixed media device when system security is compromised. The options are Always Execute, Always Deny, Allow Execute, Defer Execute, **Deny Execute** and Query User.

7-6 Boot

This submenu allows the user to configure the following boot settings for the system.

Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Main Advanced IPMI Security Boot Save & Exit
Boot Option Priorities
Boot Option #1 [P0: ST91000640NS ...]
Boot Option #2 [IBA XE Slot 0100 v2205]
Boot Option #3 [UEFI: Built-in EFI ...]
Network Device BBS Priorities
Hard Drive BBS Priorities
Sets the system boot order
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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Set Boot Priority

This option prioritizes the order of bootable devices that the system to boot from. Press [ENTER] on each entry from top to bottom to select devices.

- Boot Order #1
- Boot Order #2
- Boot Order #3
- Boot Order #4
- Boot Order #5
- Boot Order #6
- Boot Order #7
- Boot Order #8
- Boot Order #9

▶CD/DVD ROM Drive BBS Priorities (Available when a device is installed in this drive)

- Boot Order #1

▶Hard Disk Drive BBS Priorities (Available when a device is installed in this drive)

- Boot Order #1

▶USB Hard Disk Drive BBS Priorities (Available when a device is installed in this drive)

- Boot Order #1

▶Network Device BBS Priorities

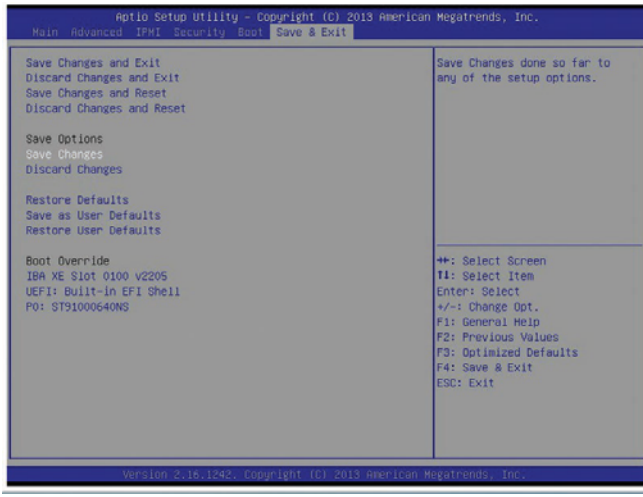
- Boot Order #1

▶UEFI Boot Drive BBS Priorities

- Boot Order #1

7-7 Save & Exit

This submenu allows the user to configure the Save and Exit settings for the system.


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Main Advanced IPMI Security Boot Save & Exit
Save Changes and Exit
Discard Changes and Exit
Save Changes and Reset
Discard Changes and Reset
Save Options
Save Changes
Discard Changes
Restore Defaults
Save as User Defaults
Restore User Defaults
Boot Override
IBA XE Slot 0100 v2205
UEFI: Built-in EFI Shell
P0: ST91000640NS
Save Changes done so far to any of the setup options.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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Save Changes and Exit

When completing the system configuration changes, select this option to save the changes and exit from the BIOS setup utility. When a dialog box appears, asking you if you want to save configuration and exit, select Yes to save the changes and exit from the BIOS setup utility.

Discard Changes and Exit

Select this option to quit the BIOS setup without making any changes to the system configuration. Select Discard Changes and Exit, and press <Enter>. When the dialog box appears, asking you if you want to exit the BIOS setup without saving, select **Yes** to quit BIOS without saving the changes.

Save Changes and Reset

When completing the system configuration changes, select this option to save the changes and reboot the computer so that the new system configuration settings can take effect.

Save Options

Save Changes

Select this option and press <Enter> to save all changes you've made so far and return to the AMI BIOS utility. When the dialog box appears, asking you if you want

to save configuration, select **Yes** to save the changes, or select No to return to the BIOS without making changes.

Discard Changes

Select this feature and press <Enter> to discard all the changes and return to the BIOS setup. When the dialog box appears, asking you if you want to load previous values, select **Yes** to load the values previous saved, or select No to keep the changes you've made so far.

Restore Optimized Defaults

Select this feature and press <Enter> to load the optimized default settings that help optimize system performance. When the dialog box appears, asking you if you want to load optimized defaults, select **Yes** to load the optimized default settings, or select No to abandon optimized defaults.

Save as User Defaults

Select this feature and press <Enter> to save the current settings as the user's defaults. When the dialog box appears, asking you if you want to save values as user's defaults, select **Yes** to save the current values as user's default settings, or select No to keep the defaults previously saved as the user's defaults.

Restore User Defaults

Select this feature and press <Enter> to load the user's defaults previously saved in the system. When the dialog box appears, asking you if you want to restore user's defaults, select **Yes** to restore the user's defaults previously saved in the system, or select No to abandon the user's defaults that were previously saved.

Boot Override

This feature allows the user to override the Boot Option Priority sequence set in the Boot menu, and boot the system with one of the listed devices instead. This is a one-time override.

- IBA XE Slot 0100 v2205
- UEFI: Built-in EFI Shell
- P0: ST91000640NS

Notes

Appendix A

BIOS Error Beep Codes

During the POST (Power-On Self-Test) routines, which are performed at each system boot, errors may occur.

Non-fatal errors are those which, in most cases, allow the system to continue to boot. The error messages normally appear on the screen.

Fatal errors will not allow the system to continue with bootup procedure. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

These fatal errors are usually communicated through a series of audible beeps. The numbers on the fatal error list correspond to the number of beeps for the corresponding error.

X10 Motherboard BIOS Error Beep Codes		
Beep Code/LED	**Error Message**	**Description**
1 beep	Refresh	Ready to boot
5 short beeps + 1 long beep	Memory error	No memory detected in the system
5 beeps	No Con-In or No Con-Out devices	Con-In includes USB or PS/2 keyboard, PCI or Serial Console Redirection, IPMI KVM or SOL. Con-Out includes Video Controller, PCI or Serial Console Redirection, IPMI SOL.
X10 IPMI Error Codes		
1 Continuous Beep	System OH	System Overheat

Notes

Appendix B

System Specifications

Processors

Four Intel® Xeon® E7-4800/8800 V2 series processors (Socket R1 LGA 2011)

Note: please refer to our website for details on supported processors.

Chipset

C602J chipset

BIOS

16MB SPI Flash EEPROM with AMI® BIOS

Memory Capacity

Eight memory cards to support a total system memory of 6 TB of DDR3-1600/1333/1066/800 ECC RDIMM/LDIMM memory.

Note: refer to Section 5-5 for details on installation.

Note: Check the Supermicro website (www.supermicro.com) for the latest memory support information.

SATA Drive Bays

24 hot-swap drive bays to house 24 2.5" hard drives.

Note: An additional backplane may be installed to support a total of up to 48 2.5" drives.

PCI Expansion

The SuperServer 4048B-TRFT has four PCI Express 3.0 x16 slots and seven PCI Express 3.0 x8 slots available.

Boards

One X10QBI baseboard (proprietary form factor)

Dimensions: (LxW) 19 x 17 in. (482.6 x 431.8 mm)

Eight X10QBI-MEM1 memory boards

One AOM-X10QBI-A I/O card

Chassis

SC418XTA-R3240B (4U rackmount)

Dimensions: (WxHxD) 7 x 17.2 x 31.3 in. (178 x 437 x 795 mm)

Weight

Gross (Bare Bone): 150 lbs. (68 kg.)

System Cooling

The system has four 9-cm system fans and three 8-cm rear exhaust fans (fan speed controlled by IPMI)

System Input Requirements

AC Input Voltage: 100 - 240V AC auto-range

Rated Input Current: 11.5 - 5.5A max

Rated Input Frequency: 50 to 60 Hz

Power Supply

Rated Output Power: 1620W (Part# PWS-1K62P-1R)

Rated Output Voltages: +12V (84A @ 100-120VAC, 100A @ 120-140VAC, 135A @ 180-264VAC), +5Vsb (4A)

Operating Environment

Operating Temperature: 10º to 35º C (50º to 95º F)

Non-operating Temperature: -40º to 70º C (-40º to 158º F)

Operating Relative Humidity: 20% to 95% (non-condensing)

Non-operating Relative Humidity: 5 to 95% (non-condensing)

Regulatory Compliance

Electromagnetic Emissions: FCC Class A, EN 55022 Class A, EN 61000-3-2/-3-3, CISPR 22 Class A

Electromagnetic Immunity: EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

Safety: CSA/EN/IEC/UL 60950-1 Compliant, UL or CSA Listed (USA and Canada), CE Marking (Europe)

California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. “Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate” for further details.

(continued from front)

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